26TH

ANNUAL REPORT

ON THE

HEALTH OF ST. HELENS

For the Year ending Dec. 31st, 1898,

BY

F. DREW HARRIS,

M.B.Lond. D.P.H.,

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AND

Public Analyst.

St. Helens:

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1899.

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HEALTH COMMITTEE

OF THE

ST. HELENS CORPORATION,

NOVEMBER, 1898.

The Right Worshipful the Mayor (Alderman R. Pilkington, J.P.)
Alderman J. FORSTER, J.P., Chairman.
Councillor J. MASSEY, Deputy-Chairman.
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„ J BURCHALL, J.P.
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„ J. GREEN, J.P.
„ E. JOHNSON.

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Councillor H. B. BATES, L.S.A.
„ E. JOHNSON.
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Councillor H. B. BATES, L.S.A.
„ J. BURCHALL, J.P.
„ J. GREEN, J.P.
„ J. MASSEY.

STATISTICAL SUMMARY FOR 1898.

POPULATION—Estimated to the middle of the year—				
	Males ... 44,215 / Females ... 40,515	Total ...		84,730
Natural increase during the year				1,631

MARRIAGES				602
Annual Rate of Persons Married per 1000 of the Population...				7·10

BIRTHS	Males ... 1,694 / Females ... 1,568	Total ...		3,262
Annual Rate of Births per 1000 of Population				38·49
Mean „ „ during years 1888 to 1897				39·1

DEATHS...	Males ... 887 / Females ... 754	Total ...		1641
Annual Rate of Mortality per 1000	Males ... 20·9 / Females 17·7	Total ...		19·36
Mean Rate during years 1888 to 1897				21·9

Total Deaths from Zymotic Diseases	262
Annual Rate of Mortality from Zymotic Diseases	3·09
Mean Rate of Mortality from Zymotic Diseases for years 1888 to 1897	3·6

Infantile Mortality Rate, 1898	172
Mean Rate for years 1888 to 1897	172

MEDICAL OFFICER OF HEALTH'S DEPARTMENT,

TOWN HALL,

ST. HELENS,

June 28th, 1899.

To the Chairman and Members of
The Health Committee,
Corporation of St. Helens.

GENTLEMEN,

I have the honour to present to you the 26th Annual Report on the health of the Borough of St. Helens, being the second issued since my appointment to be your Medical Officer.

This report deals with various statistics relating to the Public Health, and also with the work done by the Health Department during the year ending December 31st, 1898.

The Birth Rate for 1898 was 38·49 per 1,000, being about the same as last year. The continued growth of the population is thus more than maintained.

The Death Rate for 1898 was 19·36 per 1,000, being 1·7 per 1,000 below the previous year, and 2·6 below the rate for the preceding 10 years. It is the lowest death rate, except one, ever recorded in the Borough.

I would particularly draw your attention to my remarks on the influence which the age and sex constitution of a population bears on the death rate. For the first time I have endeavoured to eliminate this factor, and have worked out a comparative mortality figure for St. Helens. This, I think, compares favourably with other large manufacturing towns.

I would also draw your attention to my remarks on Typhoid Fever, and the necessity for draining and sewering the outlying portions of the Borough.

I would again venture to urge the necessity for the provision of a more commodious and more central Bateriological Laboratory than the one at present in use.

During the year the work of the Health Department has progressed, and I am of opinion that your appointment of an additional Inspector to test drains both of new and old property, will result in most material benefit to the health interests of the town.

I wish to acknowledge and thank you sincerely for the kindness and assistance which it has been my good fortune to receive from every member of the Committee—and especially the Chairman—during the year.

My thanks are also due to the Medical Practitioners in St. Helens for their assistance and cordial co-operation in all efforts to improve the Public Health.

I have further to report that the various officials connected with my department have discharged their duties satisfactorily and conscientiously.

I am, Gentlemen,

Your obedient Servant,

F. DREW HARRIS.

POPULATION.

The population of St. Helens at the middle of 1898 (June 30th) is estimated to have been 84,730 persons. Of this number 44,215 were males and 40,515 females.

In a population growing so rapidly as that of St. Helens, there is always a probability of some error in estimating the number of its inhabitants even when this is done by the most reliable known methods. In such a town the necessity for a Quinquennial Census is much more apparent than in rural districts. Every year, therefore, up to 1901, when the next Census will be taken, will increase the chances of error in estimating the population, and as a necessary consequence will cause more or less fallacious mortality and other statistics.

The method adopted in arriving at the above figures is that used by the Registrar-General, and is based on the assumption that the same rate of increase has continued since 1891 as occurred between 1881 and 1891—*e.g.*

Population	1881	...	...	58,308* (April)
,,	1891	...	...	72,413* (April)
,,	1898	...	...	84,730* (June)

*Population within the Enlarged Borough Area.

Dr. Newsholme suggests a method by means of which the estimate of population, arrived at by the Registrar-General's method, may be checked with fair accuracy. This method is based on the ascertained fact that the birth-rate in any given district remains fairly constant, so long as no new conditions of labour, etc., are introduced. The average birth-rate for the last ten years is therefore found, and from the known number of births which have occurred in the year for which the estimated population is desired, the population is calculated which would give the said number of births at the above-mentioned birth-rate. Thus from 1887 to 1897, the average birth-rate in St. Helens is found to be 39·1 per 1000, whilst the number of births registered during 1898 was 3,272. This number at the above rate (39·1) would give a population of 83,683. To this will have to be added a small number (400—500) in order to obtain the mid-year population.

Lastly, the above results may be further checked by the following method—The number of inhabited houses is ascertained from the Rate-books, and this number is multiplied by the average number of persons per house at the last Census, thus the number of inhabited houses in St. Helens during 1898 was 15,162, and the average number of persons per house at the last Census was 5·77, giving a population of 87,484 It will thus be seen that the estimates arrived at by all these methods closely approximate. It seems probable, however, that the last figure is too high, and I prefer to take that arrived at by the Registrar-General's method as the one on which to base the various rates for the year.

CAUSES OF INCREASE OF POPULATION.

The following figures show the various increases which have been registered as occurring in St. Helens during the past 16 years :—

Year.	Natural Increase.	Estimated Increase.	Increase due to Immigration.
1883	1152	1291	139
1884	1203	1321	118
1885	1062	1348	286
1886	1193	1379	186
1887	1030	1407	337
1888	1322	1440	118
1889	1236	1470	234
1890	1032	1504	472
1891	1094	1535	440
1892	1408	1574	166
1893	1236	1600*	364
1894	1482	1660	178
1895	1476	1710	234
1896	1339	1735	336
1897	1447	1774	327
1898	**1631**	**1820**	**189**

* This number does not include the increase which took place in the new area during 1893.

A natural increase of 1,631 in our population of 84,730 is at the rate of **19·2** per 1000 per annum, against 17·4 in 1897.

In England and Wales during 1898 the natural increase was at the rate of 11·8 per 1000.

DISTRIBUTION OF THE POPULATION.

In the accompanying Table are given the Statistics relating to the Distribution and Density of the Population in the various Wards.

WARDS.	Population Census 1891.	Population estimated to June 30, 1898	Area of each Ward, 1898.			Persons per Acre in 1898.
			Acres.	Ro.	Poles.	
Eccleston, North ..	8555	10003	234	2	30	42·7
Eccleston, South ..	6797	8549	617	3	32	13·8
Central	8219	8690	98	0	27	88·6
Windle, North ..	7481	9558	681	1	22	14·0
Windle, South ...	8438	9084	68	3	11	133·5
Hardshaw	9225	10502	341	0	0	30·7
Sutton, East ...	8250	9475	1300	2	18	7·2
Sutton, West ...	7418	9186	2424	1	22	3·7
Parr	8030	9683	1475	0	0	6·5
Whole Borough ...	72412	84730	7248	0	2	11·6

AGE DISTRIBUTION, 1898.

AGES.	CENSUS 1891, Old Borough Area.	Estimated Population at each Age in the Extended Borough, 1898.
Under 1 year	2398	2851
1 to 2 years	2143	2546
2 „ 3 „	2140	2543
3 „ 4 „	2068	2458
4 „ 5 „	1967	2338
Total under 5 years	10716	12736
5 to 10 years	9221	10939
10 „ 15 „	8334	10029
15 „ 20 „	7441	8834
20 „ 25 „	6582	7813
25 „ 30 „	6023	7148
30 „ 35 „	5129	6085
35 „ 40 „	4465	5295
40 „ 45 „	3674	4357
45 „ 50 „	2685	3181
50 „ 55 „	2434	2881
55 „ 60 „	1620	1916
60 „ 65 „	1407	1667
65 „ 70 „	763	907
70 „ 75 „	461	548
75 „ 80 „	227	270
80 „ 85 „	83	98
85 „ 90 „	19	22
90 „ 95 „	4	4
95 „100 „	—	—
	71288	84730

BIRTHS.

The number of Births registered during 1898 was 3,262. This number is 69 above that registered in 1897, and 220 above that registered in 1896. The birth-rate, therefore, is **38·49** per 1000 of population.

In the following Table will be found the number of births registered during the years 1888 to 1898, and the birth-rate for each year.

YEAR.		1st Quarter.	2nd Quarter.	3rd Quarter.	4th Quarter.	Totals.	Rate per 1000 per year.
1888		694	668	601	689	2652	39·2
1889		723	748	624	679	2774	39·8
1890		754	678	645	699	2776	38·9
1891		767	684	750	719	2920	40·7
1892		693	769	719	730	2913	39·7
1893		745	747	776	731	3029	40·1
1894		781	716	653	732	2882	37·0
1895		884	796	775	710	3165	39·8
1896		777	783	714	768	3042	37·4
1897		823	769	813	788	3193	38·5
Mean of 10 years ...		764	735	707	724	2934	39·1
1898	Males ...	491	384	396	423	1694	38·49
	Females..	405	392	371	400	1568	
	Total ...	896	776	767	823	3262	
	Rate per 1000..	42·2	36·6	36·2	38·8		

In England and Wales the birth-rate during 1898 was 29·4 per 1000 of the population. The rate for 1898 in England and Wales was 1·0 per 1000 below that of the previous ten years; that of St. Helens being only ·6 below the mean of the previous ten years.

It will be observed, too, that during 1898, the highest birth-rate was again registered during the 1st Quarter.

Of the 3,262 children born during 1898, 1,694 were males, and 1,568 were females, this being in the proportion of 100 males to 92·5 females. At the Census of 1891 there were 100 males to every 91·7 females in St. Helens, whereas in England and Wales at the same period there were 100 males to every 106·4 females.

Year.	Birth Rates.			
	England and Wales.	St. Helens.	33 Great Towns.	25 other Large Towns.
1888	31·2	39·2	31·2	—
1889	31·1	39·8	30·0	—
1890	30·2	38·9	30·0	—
1891	31·4	40·7	32·5	30·9
1892	30·5	39·7	31·9	31·7
1893	30·8	40·1	31·9	31·8
1894	29·6	37·0	30·7	30·3
1895	30·3	39·8	31·3	31·3
1896	29·7	37·4	30·7	30·1
1897	29·6	38·5	30·7	30·0
1898	**29·4**	**38·4**	**30·3**	**29·4**
Mean	30·3	39·0	31·0	30·7

In the table given above are set out the birth-rates for the past 10 years in England and Wales, the 33 great towns, 25 other large towns, and St. Helens. The consistently high birth-rate of St. Helens compared with these will be noted.

In Table E will be found the birth-rates for each of the 33 great towns in England and Wales, and it will be noticed that in not one of these towns was the birth-rate so high as in St. Helens. Only four of these towns—Wolverhampton, Liverpool, Sunderland, and Gateshead—had a rate over 35 per 1000 in 1898.

In Table F will be found similar statistics relative to the smaller towns, and it will be seen that here also St. Helens has the highest rate, Warrington coming next with 37·5 per 1000.

ILLEGITIMACY.

St. Helens has always had a comparatively low rate of illegitimacy, so low indeed that probably it doe not influence the mortality statistics to any appreciable degree as it does in some other Disrricts.

Of the 3,262 births during 1898, 90 were illegitimate. This is in the proportion of 972·4 legitimate births and 27·5 illegitimate births in every 1000, or, in other words, 2·7% of the total births are illegitimate. This rate is, however, slightly higher than in the previous year.

Year.	Legitimate.	Illegitimate.
1886	974	26
1887	971	29
1888	970	30
1889	975	25
1890	976	24
1891	974	26
1892	981	19
1893	974	26
1894	968·5	31·5
1895	975·0	24·9
1896	972·3	27·6
1897	976·5	23·4
1898	**972·4**	**27·5**

The above figures do not include the births which occurred in Whiston Workhouse.

It is satisfactory to know that the statistics for St. Helens regarding illegitimacy compare favourably with those of any other town in England, and are below the figures for the whole of England.

MORTALITY RATE.

The deaths of 1,641 persons took place during 1898 within the Borough of St. Helens. Of these 887 were males and 754 females. This number is equal to an uncorrected death-rate of 19·36 per 1000 of the population.

For comparative purposes certain corrections have to be applied as follows :—

I. To be deducted—	MALES.	FEMALES.	TOTAL.
(*a*) Deaths in Rainhill Asylum (Main Building)	82 ...	29 ...	111
(*b*) Deaths of Haydock patients at the Isolation Hospitals	3 ...	1 ...	4
(*c*) Deaths of patients at the Cottage Hospital who were admitted from Districts outside the Borough ..	0 ...	0 ...	0
(*d*) Deaths at the Providence Hospital under similar conditions... ...	3 ...	1 ...	4
Totals ...	88 ...	31 ...	119

II. To be added—	MALES.		FEMALES.		TOTAL.
(*a*) Deaths of St. Helens patients in Whiston Workhouse Infirmary..	47	...	32	...	79
(*b*) Deaths at Old Wint, Small-Pox Hospital of patients from St. Helens	0	...	0	...	0
(*c*) Deaths at Rainhill Asylum of patients from St. Helens ...	7	...	7	...	14
Totals ..	54	...	39	...	93

The corrected number of deaths is therefore 1,615, and the death-rate for St. Helens, with these corrections, was therefore **19·06** per 1000 of the popnlation. This number is 1·94 per 1000 below the rate in the preceding year—*i.e.*, 1897, 21·0.

The death-rate for 1898 is moreover below that of the preceding 10 years (21·9) by 2·84 per 1000 of the population.

The saving of life which this reduction in the death-rate of 2·84 per 1000 indicates, amounts to over 240 lives, with a corresponding saving in sickness.

On page 24 will be found the recorded death-rates for St. Helens during 28 years, and it will be noticed that on only one occasion has the yearly mortality rate been lower than in the present year.

In England and Wales the death-rate during 1898 was at the rate of 17·6 per 1000 of the population, and this rate was ·8 per 1000 below the mean rate for the 10 years—1888 to 1897.

In Tables E and F (pages 25 and 26) will be found the Mortality Statistics in other towns. In comparing these with St. Helens Statistics,—the social conditions,—the age and the sex distribution,—and the nature of the staple industries in each town should be taken into consideration. It will, however, be noted in comparing the Mortality Statistics of St. Helens with those of the 33 great towns that, while the St. Helens death-rate is slightly above the mean death-rate of these towns (19·06 against 19·0), there are 13 towns with a higher mortality, and 20 with a lower rate.

Again, in comparing the St. Helens death-rate with the 25 other large towns, it will be seen that there are nine towns with a higher rate and 15 with a lower rate—Dudley, with 23·17, heading the list, and Barrow-in-Furness being at the opposite pole. This comparison is, however, somewhat crude, as the different age and sex constitutions of the populations of the various districts are not taken into account.

Now, the influence of the age and sex constitution of a population on the death-rate is a very considerable one, and must always be taken into account when comparing the death-rates of different districts before any accurate comparison can be made as to their respective sanitary conditions.

It is a well-known fact that the death-rates at the different age-groups vary greatly, being specially high at the earlier and later ages (0—5 and 55 and upwards). Thus, a population consisting of an undue proportion of persons under five and over fifty-five would have an abnormally high death-rate ; conversely, a population having an undue proportion of persons at the healthy ages (5—55) would have an abnormally low death-rate. Sex exercises a very similar influence, since the death-rate among males is about 2·1 per 1000 greater than among females. Thus a populalation containing an undue proportion of males would have an unduly high death-rate, and, similarly, a population containing an undue proportion of females would have an unduly low death-rate. Now, the age and sex constitution of populations varies very widely in different localities, and until this factor has been eliminated no trustworthy comparison of the different rates can be made.

Death-rates are usually calculated as rates per 1000 on the total population, and are known as the "crude" death-rates. These "crude" death-rates, while perfectly reliable when used in comparing the rates of any given locality over a series of years, since the age and sex constitution of any given population remains, as a rule, approximately the same, become most fallacious when used in comparing the rates of different districts having probably populations of widely different age and sex constitution.

It has been argued that the high birth-rate of St. Helens unduly augments the death-rate. This, however, is not so, as though a large number of persons at 0—5 years die, a still larger number live on to reach the healthy ages (5—55), and the low death-rate among these latter more than counterbalances the high death-rates at the earlier ages. It may be taken as a proved fact that while a continuously high birth-rate tends to lower the death-rate, a spasmodically high birth-rate would tend to raise it. The age-constitution of the population of St. Helens is therefore favourable to a low death-rate.

On the other hand the population of St. Helens contains an undue proportion of males (100 males to 91·7 females ; the population of England and Wales as a whole containing 100 males to 106·4 females) The sex-constitution of the St. Helens population therefore tends to an unduly high death-rate.

From what has been said, it becomes at once apparent, that, to arrive at a true estimate of the comparative mortality of any district, this factor of age and sex-constitution must first be eliminated by means of a "factor of correction." The method usually adopted, and the one employed by the Registrar-General for the 33 great towns is based on a calculation as to what the death-rate in any given district would have been if the death-rates at each age-group for each sex were the same as the corresponding death-rates for England and Wales as a whole.

The steps in this calculation are as follows :—

1.—The population numbers for St. Helens in age and sex-groups, as shown by the Census returns of 1891 are obtained.

2.—The mean annual death-rates per 1000 for England and Wales during the 10 years, 1881—1891, for similar age and sex-groups are likewise obtained.

From these two series of numbers is calculated what the yearly number of deaths should be among the total population of St. Helens as enumerated at the Census, assuming that the death-rates were the same in St. Helens as in the whole of England and Wales.

MALES.

Ages.	Population.	Death-rates for England.	Number of Deaths.
0— 5	5385	61·69	332·19965
5—10	4642	5·34	24·78828
10—15	4219	2·94	12·80386
15—20	3951	4·30	16·98930
20—25	3604	5·71	20·57884
25—35	6120	7·73	47·30760
35—45	4404	12·35	54·38940
45—55	2678	19·28	51·63184
55—65	1507	34·66	52·23262
65—75	562	70·17	39·43554
75 and upwards ...	131	162·18	21·24558
Totals	37203		673·60251

FEMALES.

Ages.	Population.	Death-rates for England.	Number of Deaths.
0— 5	5331	51·99	277·15869
5—10	4579	5·25	24·03975
10—15	4115	3·09	12·71535
15—20	3490	4·40	15·35600
20—25	2978	5·51	16·40878
25—35	5032	7·34	36·93488
35—45	3735	10·55	39·40425
45—55	2441	15·04	36·71264
55—65	1520	28·40	43·16800
65—75	662	60·08	39·77296
75 and upwards ...	202	147·32	29·75864
	34085 Fem. 37203 Males		571·42994 Fem. 673·60251 Males
Total Population ...	71288	Total Deaths	1245·03245

4.—The death-rate per 1000 is then found from the total population and from the total number of deaths as calculated above. The death-rate so obtained is known as the "Standard death-rate."

$$\frac{1245{\cdot}03245}{71{,}288} \times 1000 = 17{\cdot}46.$$ "Standard death-rate.

5.—The ratio which the mean annual death-rate for England and Wales during the ten years, 1881—1890, bears to the standard death-rate for St. Helens taken as unity, is now found, such ratio being the "factor of correction" for age and sex constitution.

$$\frac{19{\cdot}15}{17{\cdot}46} = 1{\cdot}09679. \quad \text{"Factor of correction."}$$

6.—By multiplying the "crude" or recorded death-rates of St. Helens in each year, from 1891—1900, by this "factor of correction," the true or corrected death-rate will be obtained, *i.e.*, the death-rate has been found which would have occurred if the age and sex constitution of the population of St. Helens had been the same as that of England and Wales as a whole, or, in other words, the effect of age and sex constitution has been eliminated. One is now in a position to estimate accurately the comparative mortality of St. Helens with England and Wales and the 33 great towns, and also the true influence which insanitary surroundings and other conditions exercise on the public health.

7.—The comparative mortality figure can also be obtained by finding the proportion which the "corrected death-rate" for St. Helens in each year bears to the death-rate for England and Wales in the same year taken as 1000.

Subjoined is a Table showing accurate comparison between the death-rates for St. Helens with those for England and Wales, and also the comparative mortality figures for the years 1891—1898.

YEAR.	Crude Death-rates of St. Helens.	Standard Death-rate of St. Helens.	Factor of Correction	Corrected Death-rates of St. Helens.	Death-rates for England & Wales.	Comparative Mortality figures, England & Wales, = 1000.
1891	26·02	17·46	1·09679	28·53	20·22	1411
1892	20·55	,,	,,	22·53	18·98	1187
1893	23·46	,,	,,	25·73	19·17	1342
1894	18·02	,,	,,	19·76	16·59	1191
1895	21·08	,,	,,	23·12	18·73	1234
1896	20·24	,,	,,	22·19	17·19	1291
1897	21·0	,,	,,	23·03	17·43	1321
1898	**19·06**	,,	,,	**20·9**	**17·6**	**1187**

Thus taking the present year, the number of persons among whom 1000 deaths would have occurred in England and Wales would have given 1187 deaths in St. Helens.

In Table G, on page 27, will be found the comparative mortality figures of the 33 great towns. It will be noted that in 12 towns a higher comparative mortality figure is found than in St. Helens.

The death-rates in each Quarter of the past five years are seen below :—

	1894	1895	1896	1897	1898
1st Quarter ...	17·5	19·5	19·6	17·0	**18·4**
2nd ,, ...	16·8	19·3	19·8	21·1	**16·4**
3rd ,, ...	17·4	22·9	19·9	23·7	**21·9**
4th ,, ...	20·2	22·4	22·8	22·2	**20·5**

Once again it will be noted that the highest rate occurred in the 3rd Quarter, a fact mainly to be attributed to the large number of deaths from Epidemic Diarrhœa during that period.

The death-rates in the various Wards are shewn below :—

WARDS.	Death-rate 1894	Death-rate 1895	Death-rate 1896	Death-rate 1897	Death-rate **1898**
Eccleston, North ...	19·0	22·1	19·5	20·6	**23·1**
Eccleston, South ...	12·5	11·7	14·5	16·7	**11·3**
Central	14·4	19·2	20·4	21·0	**14·6**
Windle, North	14·1	18·4	18·9	19·2	**17·6**
Windle, South	15·5	16·4	18·5	18·7	**14·8**
Hardshaw ‡	27·5 ‡	21·9 ‡	20·7 ‡	22·4 ‡	**24·4** ‡
Sutton, East †	15·2 †	17·1 †	16·9 †	16·9 †	**15·6** †
Sutton, West * ...	26·8 *	36·4 *	31·8 *	33·8 *	**31·4** *
Parr	16·6	22·3	23·1	19·6	**21·1**

* Including Deaths in Rainhill Asylum (main building) and in the Fever Hospital.

† Do. do. The St. Helens Hospital.

‡ Do. do. The Providence Hospital.

In comparing this Table with the one on page 12 showing the Distribution of population according to Wards, it will be noted that the two Wards in which there are the greatest number of persons to the acre, are characterised with two of the lowest death-rates. This would appear to show that overcrowding at least on space has little to do with the high death-rate in St. Helens. At some future time I shall hope to make a more careful study of this fact.

The death-rates of Males and Females during the past five years are as follows :—

	Males.	Females.	Total.
1894 ...	17·8	18·1	18·0
1895 ...	22·0	20·0	21·0
1896 ...	20·8	19·5	20·2
1897 ...	21·3	20·7	21·0
1898 ...	**20·9**	**17·7**	**19·3**

MORTALITY AT VARIOUS AGES.

In the following Table will be seen the Death-rates at each group during the years 1894-98; also the Mean rate at each age.

AGES.	Death Rate per 1000 of the Population at each Age Group.					
	1894	1895	1896	1897	1898	Means
Under 1 year ...	178·4	215·4	197·8	207·2	198·5	199·4
1 to 2 years ...	59·5	79·5	69·5	83·4	77·3	73·8
2 „ 3 „ ...	17·5	20·5	29·0	31·7	20·4	23·8
3 „ 4 „ ...	10·6	9·5	20·7	21·2	13·4	15·0
4 „ 5 „ ...	9·7	9·1	10·2	14·8	8·9	10·5
5 „ 10 „ ...	4·7	5·4	6·0	5·0	3·1	4·8
10 „ 15 „ ...	2·9	3·8	2·7	1·5	2·9	2·7
15 „ 20 „ ...	3·6	4·5	3·4	2·8	4·0	3·6
20 „ 25 „ ...	6·5	5·5	5·8	5·2	5·2	5·6
25 „ 35 „ ...	7·2	8·2	8·2	8·5	7·7	7·9
35 „ 45 „ ...	11·6	14·4	14·5	11·3	12·4	12·8
45 „ 55 „ ...	20·4	21·4	21·1	26·8	21·1	22·1
55 „ 65 „ ...	35·4	35·0	38·0	32·8	40·1	36·2
65 „ 75 „ ...	71·2	79·2	74·7	78·7	61·8	73·1
75 „ 85 „ ...	112·7	167·6	138·4	138·8	114·1	134·3
Upwards of 85 years.	80·0	280·0	192·3	315·3	153·8	204·2
All under 5 years ...	59·2	71·7	69·8	76·2	68·2	69·0
All over 5 years ...	10·7	12·1	11·8	11·2	10·7	11·3
All ages	18·0	21·0	20·4	21·0	19·3	19·9

The causes of death at each age group and in each Ward are set out in Table D at the end of this Report.

INFANTILE MORTALITY RATE.

This rate shows the number of deaths of children under 1 year of age per 1000 births. In 1898 it was 172, as against 181 in the preceding year, and a mean rate of 172 in the preceding 10 years.

In England and Wales it was 160 in 1898.

Year.	INFANT MORTALITY RATE.				
	England and Wales.	St. Helens.	33 Great Towns.	67 Large Towns (other than the 33).	Rural Districts.
1889	144	177	—	—	—
1890	151	170	—	—	—
1891	149	180	167	161	—
1892	147	147	163	160	133
1893	159	196	181	173	139
1894	137	161	152	115	98
1895	161	181	182	141	114
1896	148	177	168	161	104
1897	156	181	176	169	110
1898	**160**	**172**	**178**	**173**	**116**
Average	151	174	170	156	116

In Tables E and F the rates in other towns are indicated. It will be at once apparent on reference to these that in this respect St. Helens compares most favourably with the other towns tabulated Not only is the Infantile Mortality Rate below that of the great towns taken as a whole, but 22 have a greater mortality and only 11 a smaller one. Among the 25 smaller towns tabulated, 18 have a higher rate and only 7 a lower. Compared with England and Wales as a whole, and with "rural" districts, the figures are not nearly so favourable, and, as has been pointed out elsewhere, much remains to be done in limiting the great loss of infant life at present taking place.

MORTALITY RATE PER 1000 LIVING UNDER 5 YEARS

The mortality rate per 1000 living under 5 years in England and Wales, and St. Helens for each of the past 5 years, is set out below :—

	1894	1895	1896	1897	1898	Average.
England and Wales...	50·7	59·0	54·9	55·2	—	For 4 years 54·9
St. Helens	59·2	71·7	69·8	76·2	**68·2**	For 5 years 69·0

TABLE SHOWING THE VITAL AND MORTAL STATISTICS FOR ST. HELENS DURING 28 YEARS.

YEARS.	Population.	Birth Rate.	Death Rate.	Zymotic Death Rate.	DEATHS FROM							
					Small Pox.	Measles.	Scarlet Fever.	Typhoid and Continued Fever.	Typhus Fever.	Diarrhœa.	Whooping Cough.	Diphtheria.
1871	45400	..	27·79	9·4	..	..	..	28	..	..	..	..
1872	46510	..	20·46	4·9	65	14	6	24	3	65	16	3
1873	47630	46·65	23·63	5·03	4	19	92	24	2	79	9	15
1874	48790	46·30	31·43	9·2	0	29	231	25	1	110	41	14
1875	49970	45·42	24·69	5·3	0	4	77	65	1	101	31	10
1876	51190	45·60	23·28	5·1	0	102	21	40	1	86	7	15
1877	52430	44·33	22·84	3·2	0	2	12	34	1	74	48	11
1878	53700	46·21	23·99	4·2	0	4	22	40	0	132	15	20
1879	55010	41·13	22·40	5·7	0	143	83	34	2	52	2	3
1880	56340	41·56	20·05	4·6	0	0	27	40	2	130	71	1
1881	57711	43·52	21·69	2·92	0	14	28	56	0	76	3	3
1882	58972	43·70	25·46	7·4	0	250	36	33	1	85	36	6
1883	60263	40·69	21·65	2·5	0	3	14	31	1	69	24	11
1884	61584	42·50	24·16	5·3	0	131	16	33	2	131	9	11
1885	62932	39·93	23·32	3·5	0	81	13	7	1	56	53	11
1886	64311	40·70	22·46	5·2	0	102	34	28	0	122	41	10
1887	65718	37·00	21·69	3·9	0	53	35	34	0	101	28	11
1888	67158	39·20	19·80	3·1	0	38	11	22	0	65	61	21
1889	68628	39·86	23·50	4·18	0	78	3	81	1	85	15	29
1890	70132	38·90	25·43	5·3	0	19	181	24	1	74	68	13
1891	71666	40·70	26·02	3·0	0	54	24	26	0	78	29	9
1892	73240	39·77	20·55	2·64	1	23	18	25	0	84	31	12
1893	*75390	40·10	23·46	5·3	5	135	6	52	0	168	19	16
1894	*77690	37·09	18·02	2·21	0	21	14	26	2	38	61	10
1895	*79400	39·8	21·08	3·08	1	54	9	59	0	101	14	8
1896	*81136	37·49	20·24	3·63	0	38	59	40	0	63	78	17
1897	*82910	38·51	21·0	4·22	0	87	44	33	0	133	33	20
1898	***84730**	**38·49**	**19·3**	**3·09**	**0**	**17**	**24**	**30**	**0**	**140**	**34**	**16**

* These figures include Population in Area added 1893.

CHART No. 1.

Years	Birth Rate	Rainfall in inches	Mean Temp Air	Highest Temp. Shade	Chief Zymotics
18 72	46·57	44·3	49·3	71·4	
73	46·65	24·9	48·2	89·1	
74	46·30	27·8	48·6	82·3	Scarlet Fever.
75	45·42	30·1	48·4	78·0	
76	45·60	36·3	48·4	84·8	
77	44·33	41·7	48·3	79·0	
78	43·27	35·5	48·5	85·0	Diarrhœa.
79	41·13	24·3	45·5	75·9	Measles.
18 80	41·56	29·7	48·2	82·4	
81	43·52	36·7	46·9	84·2	
82	43·70	39·7	48·5	71·4	Measles.
83	40·69	34·8	48·0	74·9	
84	42·50	26·9	49·2	84·9	Measles. Diarrhœa.
85	39·93	32·7	46·9	76·6	
86	40·70	33·0	47·3	77·1	Diarrhœa
87	37·00	21·1	47·0	82·9	
88	39·20	28·1	46·7	82·3	
89	39·86	25·8	47·8	78·0	Typhoid Fever
18 90	38·90	27·0	47·8	76·6	Scarlet Fever
91	40·70	32·3	47·2	78·9	
92	39·77	34·8	46·6	78·9	Diarrhœa.
93	40·10	25·7	50·1	75·0	Measles Diarrhœa.
94	37·09	33·3	48·9	81·0	
95	39·80	28·0	47·2	80·2	
96	37·49	30·0	48·5	84·2	Scarlet Fever
97	38·51	33·6	48·7	84·4	Diarrhœa
98	38·49	27·1	49·7	79·9	Diarrhœa

Rate per 1000 per Annum

32 31 30 29 28 27 26 25 24 23 22 21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1

GENERAL DEATH RATE

ZYMOTIC RATE

FOR 27 YEARS

TABLE E.

TABLE COMPILED FROM THE REGISTRAR GENERAL'S QUARTERLY REPORTS, IN ORDER TO SHOW THE MORTALITY AND OTHER STATISTICS OF ST. HELENS, COMPARED WITH THE 33 GREAT ENGLISH TOWNS, IN 1898.

TOWN.	Population	Birth Rate per 1000	Death Rate per 1000	Infantile Rate per 1000 Births	Zymotic Rate per 1000
33 Towns	11,218,378	30·3	19·0	178	2·83
London	4,504,766	29.5	18·6	167	2·80
West Ham	286,654	30·6	15·4	170	2·67
Croydon	124,421	25·3	13·8	150	1·99
Brighton	122,310	24·8	16·9	180	2·36
Portsmouth	186,618	26·7	16·3	155	2·15
Plymouth	99,136	29·6	19·5	170	2·14
Bristol	316,900	28·6	17·2	164	2·69
Cardiff	177,770	31·1	14·8	158	2·23
Swansea	102,001	28·9	18·5	184	3·21
Wolverhampton ..	88,051	35·7	21·2	199	3·19
Birmingham	510,343	34·0	20·0	190	2·78
Norwich	111,699	29·8	18·9	194	3·26
Leicester	208,662	22·5	16·9	191	3·35
Nottingham	236,137	28·8	17-6	178	2·37
Derby	104,834	27·3	16·8	168	2·24
Birkenhead	113,189	30·4	17 4	184	2·53
Liverpool	633,645	35·1	23·9	184	3·21
Bolton	122,495	30·9	19·3	167	2·93
Manchester	539,079	32·7	21·9	197	3·11
Salford	215,702	34·7	22·7	213	4·03
Oldham	148,288	25·3	17·5	174	2·15
Burnley	109,546	27·1	16·3	196	2·04
Blackburn	133,288	27·0	18·4	207	2·57
Preston	116,356	31·0	19·3	221	3·06
Huddersfield	102,454	22·4	15·9	152	1·61
Halifax	96,729	22·2	17·8	163	2·14
Bradford	233,737	23·9	17·6	184	2·11
Leeds	416,618	31·2	19·2	182	3·11
Sheffield	356,478	33·8	20·2	194	3·82
Hull	229,887	33·4	18·3	182	2·98
Sunderland	143,849	35·4	22·6	201	3 71
Gateshead	103,775	35·5	20·6	208	3·10
Newcastle	223,021	31·6	21·4	190	2·85
St. Helens .. .	**84,730**	**38·49**	**19·3**	**172**	**3·09**

TABLE F.

TABLE SHOWING COMPARATIVE STATISTICS BETWEEN ST. HELENS AND OTHER SMALLER TOWNS DURING 1898.

TOWN.	Population.	Birth Rate per 1,000.	Death Rate per 1,000.	Infantile Death Rate per 1,000 Births.	Zymotic Rate per 1,000.
Southampton	103,186	28·5	16·5	153	2·52
Reading	69,477	26 64	14·59	153·4	1·63
Northampton	67,414	25·1	14·7	188·3	2·0
Hanley	60,274	34·4	19·8	223	2·7
Burton-on-Trent	51,664	28·30	14·81	142	1·92
Walsall	81,344	35·2	18·3	163	2·33
West Bromwich	63,500	35·7	19·1	182	3·1
Dudley	48,682	35·72	23·17	209	6·1
Aston Manor	80,0 6	31·6	15·1	175	2·9
Coventry	62,459	30 6	16·8	200	2·9
Grimsby	62,000	30·2	16·1	223	2·4
Stockport	81,(00	29·4	20·3	231	4·0
Bootle	53,500	33·12	19·71	183	3:56
Wigan	61,697	34·49	18·91	170	2·47
Warrington	62,770	37·5	17·8	169	3·2
Bury	60,579	24·48	17·82	185	2·70
Ashton-under-Lyne	44,700	26·5	19·1	195	1·7
Rochdale	74,699	25 33	18·26	133	0·96
Accrington	43,615	23·7	15·8	198	2·24
Newport	70,738	29·6	16·6	178·9	3·11
Barrow-in-Furness	56,413	26·8	14·3	174	2·2
York	67,757	33·2	20·4	173	2·19
Middlesborough	89,246	32·52	21·77	190	4·2
South Shields	98,922	33·9	20·08	184	2·87
Rhondda Urban District Ystradyfodwg	119,853	34·3	16·5	192	2·9
St. Helens	**84,730**	**33·49**	**19·3**	**172**	**3·09**

TABLE G.

RECORDED AND CORRECTED DEATH RATES PER 1000 PERSONS LIVING IN 33 GREAT TOWNS IN 1898.

Towns in the order of their Corrected Death-rates.	Standard Death-rate.	Factor for Correction for Sex and Age Distribution.	Recorded Death-rate, 1898.	Corrected Death-rate, 1898.	Comparative Mortality Figure, 1898.
England and Wales	19·15	1·0000	17·58	17·58	1,000
Do. (less the 33 towns)	19·45	0·9845	16·78	16·52	940
33 Towns	17·71	1·0113	19·03	20·58	1,171
Croydon	18·37	1·0424	13·89	14·48	824
Cardiff	17·16	1·1159	14·82	16·54	941
West Ham	17·75	1·0788	15·41	16·62	945
Portsmouth	18·73	1·0224	16·30	16·67	948
Brighton	18·94	1·0110	16·91	17·10	973
Bristol	18·33	1·0379	17·20	17·85	1,015
Norwich	19·99	0·9579	18·96	18·16	1,033
Leicester	17·64	1·0855	16·93	18·38	1,046
Huddersfield	16·47	1·1627	15 92	18·51	1,053
Derby	17·36	1·1031	16·82	18·55	1,055
Burnley	16·67	1·1487	16·30	18·72	1,065
Plymouth	19·70	0·9720	19·54	18·99	1,080
Nottingham	17·81	1·0752	17·67	19·00	1,081
Birkenhead	17·42	1·0933	17·44	19·17	1,090
Hull	18·23	1·0504	18·36	19·29	1,097
Halifax	17·20	1·1133	17·87	19·89	1,131
London	17·97	1·0656	18·68	19·91	1,133
Oldham	16·72	1·1453	17·58	20·13	1,145
Bradford	16·73	1·1446	17·60	20·14	1,146
Swansea	17·53	1·0924	18·57	20·29	1,154
Blackburn	17·05	1·1231	18·45	20·72	1,179
St. Helens	**17·46**	**1·0968**	**19·03**	**20·9**	**1,187**
Preston	17·42	1·0993	19·35	21 27	1,210
Leeds	17·28	1·1082	19·21	21·29	1,211
Bolton	16·90	1·1331	19·38	21·96	1,249
Birmingham	17·33	1·1050	20·00	22·10	1,257
Gateshead	17·83	1·0740	20·61	22·14	1,259
Wolverhampton	18·30	1·0464	21·27	22·26	1,266
Sheffield	17·22	1·1120	20·24	22·51	1,280
Newcastle	17·58	1·0892	21·42	23·33	1,327
Sunderland	18·25	1·0493	22·63	23·75	1,351
Manchester	16·90	1·1331	21·89	24 80	1,411
Salford	17·03	1·1244	22·70	25·52	1,452
Liverpool	17·44	1·0980	23·98	26·33	1,498

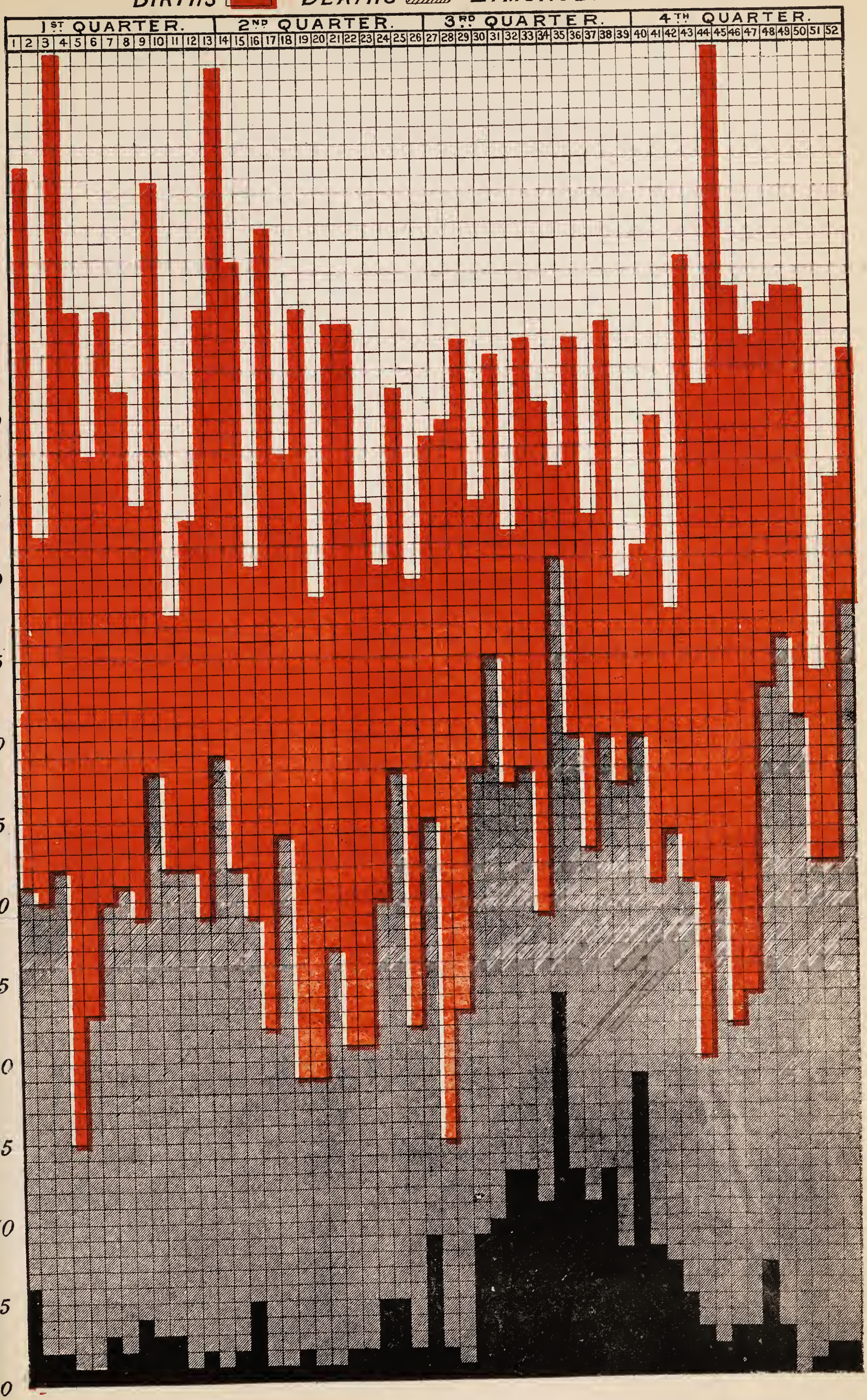
TABLE H.

WEEKLY RETURNS OF BIRTHS AND DEATHS FOR 1898.

1898.		Deaths from all causes.	Annual Rate per 1000.	Deaths from seven principal Zymotics.	Annual Rate per 1000, for Zymotics.	Births.	Annual Rate per 1000, Births.
						(7 days)	
Week ending January (1 day)	1	2	1·2	0	·0	59	36·2
,, ,,	8	29	17·8	6	3·6	76	46·7
,, ,,	15	30	18·4	2	1·2	53	32·5
,, ,,	22	32	19·6	2	1·2	83	51·0
,, ,,	29	15	9·2	1	·6	67	41·2
,, February	5	23	14·1	1	·6	58	35·6
,, ,,	12	30	18·4	3	1·8	67	41·2
,, ,,	19	31	19·0	2	1·2	62	38·1
,, ,,	26	29	17·8	4	2·4	55	33·8
,, March	5	38	23·3	3	1·8	75	46·1
,, ,,	12	32	19·6	3	1·8	48	29·5
,, ,,	19	32	19·6	1	·6	54	33·2
,, ,,	26	29	17·8	2	1·2	67	41·2
,, April	2	39	23·9	1	·6	82	50·4
,, ,,	9	32	19·6	2	1·2	70	43·0
,, ,,	16	29	17·8	5	3.0	51	31·3
,, ,,	23	22	13·5	1	·6	72	44·2
,, ,,	30	34	20·9	1	·6	58	35 6
,, May	7	19	11·6	2	1·2	67	41·2
,, ,,	14	19	11·6	1	·6	49	30·1
,, ,,	21	27	16·6	1	·6	66	40·5
,, ,,	28	21	12·9	2	1·2	66	40·5
,, June	4	21	12·9	2	1·2	55	33·8
,, ,,	11	30	18·4	5	3·0	51	31·3
,, ,,	18	38	23·3	5	3·0	62	38·1
,, ,,	25	22	13·5	2	1·2	50	30·7
,, July	2	35	21·5	9	5 5	59	36·2
,, ,,	9	15	9·2	2	1·2	60	36·9
,, ,,	16	23	14·1	1	·6	65	39·9
,, ,,	23	38	23·3	9	5·5	55	33 8
,, ,,	30	45	27·6	10	6·1	64	39·3
,, August	6	37	22·7	13	7 9	53	32·5
,, ,,	13	38	23·3	13	7·9	65	39·9
,, ,,	20	29	17·8	11	6·7	61	37·5
,, ,,	27	51	31·3	24	14·7	57	35·0
,, September	3	40	24·6	13	7·9	65	39·9
,, ,,	10	33	20·2	11	6·7	54	33·2
,, ,,	17	40	24·6	13	7·9	66	40·5
,, ,,	24	37	22·7	8	4·9	50	30·7
,, October	1	40	24·6	19	11·6	52	31·9
,, ,,	8	31	19·0	8	4·9	60	36 9
,, ,,	15	34	20·9	7	4·3	48	29·5
,, ,,	22	31	19·0	5	3·0	70	43 0
,, ,,	29	20	12·3	3	1·8	62	38·1
,, November	5	31	19·0	2	1·2	83	51·0
,, ,,	12	22	13·5	3	1·8	68	41 8
,, ,,	19	23	14·7	3	1·8	65	39·9
,, ,,	26	44	26·4	7	4·3	67	41 2
,, December	3	46	28·2	3	1·8	68	41·8
,, ,,	10	41	25·2	0	·0	68	41·8
,, ,,	17	32	19·6	1	·6	44	27·0
,, ,,	24	32	12·6	2	1·2	56	34·4
,, ,,	31	48	29·5	2	1·2	64	39·3

& ZYMOTIC DEATHS DURING 1898.

BIRTHS DEATHS ZYMOTIC DEATHS



CAUSES OF DEATH.

THE ZYMOTIC DISEASES.

The mortality from the seven principal Zymotic Diseases, *i.e.*, Small Pox, Measles, Scarlet Fever, Diphtheria, Whooping Cough, Fever (including Typhus, Typhoid, and Continued), and Diarrhœa, was at the rate of **3·09** per 1000 per annum during 1898.

In England and Wales the rate of mortality for this Group was 2·21 per 1000 per annum during last year.

The Zymotic Rate of 3·09 during 1898, which was lower than in the preceding year, was made up as follows :—

	1897		1898
Small Pox	0·00	...	0·00
Measles	1·04	...	0·20
Scarlet Fever	0·53	...	0·28
Diphtheria	0·24	...	0·18
Whooping Cough ...	0·39	...	0·40
"Fever"	0·39	...	0·36
Diarrhœa	1·66	...	1·65
	4·22	...	3·09

With the single exception of Whooping Cough, a lower rate was recorded in all these diseases, while in Whooping Cough the rate was only fractionally higher.

The following Table shows the yearly rate from Zymotic Diseases during each of the past 26 years, and also the rate for each quinquennial period. It will be seen that there is a gradual diminution taking place in the number of deaths from this group of eminently preventible Diseases.

Year.	Rate.	Year.	Rate.	Year.	Rate.	Year.	Rate.	Year.	Rate.
1873	5·0	1878	4·2	1883	2·5	1888	3·1	1893	5·3
1874	9·2	1879	5·7	1884	5·3	1889	4·18	1894	2·21
1875	5·3	1880	4·6	1885	3·5	1890	5·3	1895	3·08
1876	5·1	1881	2·9	1886	5·2	1891	3·0	1896	3·6
1877	3·2	1882	7·4	1887	3·9	1892	2·64	1897	4·22
Mean	5·5		4·9		4·0		3·6		3·6

1898 ... ... 3·09

In Tables E and F will be found the Zymotic rates for 1898 of other towns.

The relative prevalence of the diseases in this group in 1898, compared with the mean during the 25 years—1873-1897—is set out in the following Table.

Disease.	Per cent. of Zymotic Deaths.	
	25 Years, 1873-1897.	1898.
Small Pox	·15	0·00
Measles	21·31	6·48
Scarlet Fever	15·94	9·16
Diphtheria	4·40	6·10
Fever	13·37	11·83
Whooping Cough ...	11·87	12·97
Diarrhœa...	32·93	53·43
	100%	100%

It will be seen, therefore, that the relati ve proportion of deaths from Diarrhœa was largely in excess of the mean, whilst that from Whooping Cough and Diphtheria was slightly so: on the other hand Enteric Fever, Scarlet Fever, and Measles, were below the mean to an almost equal extent.

The Zymotic rates during each of the 4 Quarters of the years 1891 to 1898 were as follows:—

	1st Quarter.	2nd Quarter.	3rd Quarter.	4th Quarter.
1891	2·5	2·9	3·2	3·1
1892	2·0	1·2	3·9	2·4
1893	6·4	4·2	10·3	2·0
1894	2·26	1·39	2·62	2·57
1895	2·00	1·45	6·06	2·80
1896	2·51	4·19	4·63	3·20
1897	1·44	4·00	8·20	3·23
1898	**1·46**	**1·79**	**6·93**	**2·17**

The high rate in the 3rd Quarter corresponds to the severe outbreak of Diarrhœa which occurred in August and September.

In Table D will be found certain details regarding the deaths from Zymotic diseases as to age groups and localities.

The following gives the number of deaths in each Ward during the seven years 1892 to 1898.

WARDS	Total Deaths from 7 Principal Zymotics in each year.							Persons per Acre.	Estimated Populati'n
	1892	1893	1894	1895	1896	1897	1898		
Eccleston, North ..	24	55	20*	33*	50*	58*	**53***	42·7	10,003
Eccleston, South ..	13	34	16*	19*	18*	33*	**11***	13·8	8,549
Central	17	47	13	36	36	32	**24**	88·6	8,690
Windle, North ..	9	32	14*	20*	25*	40*	**23***	14·0	9,558
Windle, South ..	37	50	14	20	32	33	**24**	133·5	9,084
Hardshaw	23	40	35	19	31	36	**29**	30·7	10,502
Sutton, East ..	11	23	15	17	25	21	**20**	7·2	9,475
Sutton, West (†) ..	24	61	26	59	32	69	**44**	3·7	9,186
Parr	36	60	19	22	46	28	**34**	6·5	9,683
Totals.. ..	194	402	172	245	295	350	**262**	11·6	84,730

* Including Deaths in the Area added to these Wards in August, 1893.
(†) Including Deaths in Fever Hospital.

Appended is a Table showing the Yearly Number of Notifications, the Case Rate and Fatality Rate since the Adoption of the Notification Act in 1891.

Disease.	1891.			1892.			1893.			1894.		
	Notifications.	Case Rate per 1000.	Fatality %	Notifications.	Case Rate per 1000.	Fatality %	Notifications.	Case Rate per 1000.	Fatality %	Notifications.	Case Rate per 1000.	Fatality %
Small Pox	0	—	—	23	·31	4·34	40	·53	12·50	2	·02	·0
Scarlet Fever	210	2·93	11·42	438	5·98	4·10	237	3·14	2·53	342	4·40	4·09
Diphtheria	69	1·07	11·68	77	1·10	14·81	68	1·04	20·25	80	1·10	11·62
Membraneous Croup ...	8			4			11			6		
Typhoid Fever ...	185	2·59	13·97	138	1·91	17·85	315	4·23	16·30	172	2·34	14·28
Typhus Fever ...	—			—			1			7		
Continued Fever ...	1			2			3			3		
Relapsing Fever ...	—			—			—			—		
Puerperal Fever ...	16	·22	93·75	14	·19	50·0	19	·25	52·63	26	·33	23·07
Erysipelas	58	·80	3·44	76	1·03	6·57	98	1·29	2·04	75	·96	2·66

Disease.	1895.			1896.			1897.			1898.		
	Notifications.	Case Rate per 1000.	Fatality %	Notifications.	Case Rate per 1000.	Fatality %	Notifications.	Case Rate per 1000.	Fatality %	Notifications.	Case Rate per 1000.	Fatality %
Small Pox	10	·12	·10	0	—	—	0	—	—	0	—	—
Scarlet Fever	222	2·70	4·05	1310	16·14	4·50	914	16·14	4·81	385	4·54	6·23
Diphtheria	60	·83	12·12	62	·88	23·61	59	·79	30·30	50	·70	96·66
Membraneous Croup	6			10			7			10		
Typhoid Fever	257	3·27	22·69	165	2·07	23·80	147	1·77	22·44	136	1·61	22·62
Typhus Fever...	—			—			—			—		
Continued Fever	3			3			—			1		
Relapsing Fever	—			—			—			—		
Puerperal Fever	17	·21	52·94	11	·13	63·63	19	·22	52·63	7	·08	57·14
Erysipelas	69	·86	1·44	137	1·68	2·91	162	1·95	1·85	173	2·04	1·73

SMALL POX.

For the third year in succession no case of this disease was reported.

The cases of Small Pox which have occurred in recent years in St. Helens are set out in the following Table.

	1888	1889	1890	1891	1892	1893	1894	1895	1896	1897	1898
Cases of Sickness from Small Pox	5	0	1	0	23	40	2	10	0	0	**0**
No. of Deaths ...	0	0	0	0	1	5	1	1	0	0	**0**

St. Helens may be considered well-equipped for dealing with any cases that may be imported in the future. As the subjoined Table shows, it is a particularly well vaccinated town, only an average of 3·6 per cent. per annum of the children born during the last 10 years being returned as unvaccinated, whilst even of this number a large proportion is accounted for by removals from the district.

During the year the Vaccination Act, 1898, has come into force. While it would appear that its influence has been practically nil in St Helens, I cannot but regard Section 2, by which is created the conscientious objector, a grave calamity. In the Borough only nine certificates have been granted to "conscientious objectors," a fact which speaks volumes for the general good sense of the inhabitants of St. Helens. Otherwise, I believe the Act will make for good, in that it substitutes calf-lymph for arm-to-arm vaccination; extends the time for the vaccination of the child to six months, and enables the public vaccinator to visit and vaccinate the child at its own home. It is to be regretted that facilities for the re-vaccination of children on leaving school were not provided in the Act. The growing practice of vaccinating with less than four marks must also be deprecated.

VACCINATION.

The following Table shows the Vaccination Returns for 10 years. It compares favourably with that of other towns.

YEAR	1 Births.	2 Vaccinated.	3 Insusceptible	4 Dead.	5 Con. Obje't'r	6 Postponed.	7 Removed	8 Unaccounted	Percentage not Vaccinated including Columns 6, 7, 8
1888	*2652	2226	—	316	—	—	105	5	4·2
1889	*2721	2279	—	319	—	—	112	11	4·8
1890	*2669	2190	4	369	—	—	99	7	3·9
1891	*2827	2345	15	386	—	—	71	10	2 8
1892	*2817	2424	6	318	—	—	61	8	2·4
1893	*2856	2376	14	370	1	—	91	4	3·3
†1894	*2711	2283	10	310	1	—	100	7	3·9
†1895	*2943	2439	17	377	3	1	100	6	3·6
†1896	*3006	2532	14	349	—	10	90	11	3·6
†1897	*3207	2663	11	385	4	7	128	9	4·4

* The above Returns are for St. Helens Sub-District of the Prescot Union, which does not include quite the whole of the Borough.

† The Returns in Columes 6, 7, and 8, will still further be reduced for these years.

The above figures have been supplied by Mr. Welch, Vaccination Officer for St. Helens.

MEASLES.

Measles caused only **17** deaths during the year, giving a death-rate of ·20 per 1000, as against 1·04 in 1897, and ·42 in England and Wales. Comparing this number with that in former years, we obtain the following figures:—

	1884	1885	1886	1887	1888	1889	1890	1891	1892	1893	1894	1895	1896	1897	1898	Mean of 15 years
ST. HELENS Tot. Deaths from Measles...	145	70	102	53	41	75	16	54	23	135	21	54	38	87	**17**	62
ST. HELENS Death Rate per 1000	2·35	1·11	1·58	·80	·61	1·09	·22	·75	·31	1·8	·27	·68	·46	1·04	**·20**	·88
England & Wales Death Rate	·41	·52	·43	·59	·34	·50	·43	·43	·30	·30	·37	·37	·55	·40	**·42**	·42

The following Table shows the periods during which Measles has been prevalent in each of the 17 years—1882 to 1898.

Year.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct	Nov.	Dec.	Total Deaths in each year
1882	16	42	80	83	10	2	7	3	2	5	0	0	250
1883	0	0	0	0	0	1	1	0	0	0	1	0	3
1884	0	0	2	3	1	0	0	0	3	16	45	75	145
1885	36	10	10	3	2	5	2	1	0	0	0	1	70
1886	3	3	1	8	3	2	16	8	3	15	29	11	102
1887	4	2	6	6	2	1	1	4	1	6	10	10	53
1888	3	0	0	0	0	0	0	0	1	3	7	27	41
1889	10	13	8	11	5	11	3	3	1	7	2	1	75
1890	0	0	0	0	0	0	0	0	0	6	5	5	16
1891	4	3	3	14	11	6	3	0	2	3	5	0	54
1892	0	0	0	1	0	0	0	1	0	1	5	15	23
1893	31	31	31	28	5	4	2	1	2	0	0	0	135
1894	0	0	1	0	0	0	0	0	0	8	11	1	21
1895	3	10	5	3	2	11	9	6	1	1	3	0	54
1896	1	3	11	10	2	1	4	2	0	2	1	1	38
1897	0	1	2	2	15	19	9	8	6	3	13	9	87
1898	**2**	**1**	**0**	**1**	**2**	**8**	**1**	**0**	**1**	**0**	**1**	**0**	**17**
Totals...	113	119	160	173	60	71	58	37	23	76	138	156	1184

From the above Table it will be seen that only once in the past seventeen years has Measles caused so low a mortality. In St. Helens, Measles is not a notifiable disease, and formerly, the only means by which information was obtained by the Health Department, was through the visits of the Sanitary Inspectors, and by notification by the School Authorities and the School Attendance Officers. During the year, however, a system of notification was introduced. The head teachers of the various Schools were supplied with post-cards * and requested to notify the Health Department

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* Name of School. .....Schools.

NAME.	ADDRESS.	STANDARD.

The above are suspected cases of Measles.

Signed.....

Date.....189..

of any suspected cases of Measles which came to their notice. For this they were paid at the rate of threepence per actual case of Measles reported. By this means 405 suspicious cases were reported, of which 212 proved to be actual cases of Measles. Every case reported was visited by the Female Sanitary Inspector, and particulars obtained as to the source of infection, school attendance, and where there was clearly sufficient evidence, the school, or part of it, was closed. Instructions were also given as to the necessity for isolation, and parents were warned of the danger of exposing children suffering from the disease. By these means, there can be little doubt, many lives were saved.

The cost of this system of notification has not been great, and with more extended use, much may be done to limit the number of deaths from this scourge of childhood. It may be added that the system is also advantageous to the Schools since, by means of the notices served by the Health Department to exclude scholars, a portion of the grant, which would otherwise be lost, may be recovered from the Education Department, whilst the notification fee compensates the teachers for the trouble they are put to in filling in the post cards.

It is too soon as yet to speak definitely as to this system of notification, but it seems probable that it was largely responsible for the year's low death-rate.

The following Table shows the ages at which the deaths from Measles occurred during the past eight years. From this it will be seen that Measles is essentially a disease of childhood, the maximum mortality being reached in the second year of life.

Ages at Death from Measles—1891 to 1898.

	1891	1892	1893	1894	1895	1896	1897	1898	Total.
0 to 3 months	0	1	1	1	0	0	0	0	3
3 „ 6 „	2	0	5	0	1	0	2	0	10
6 „ 12 „	8	4	32	6	8	7	22	2	89
1 „ 2 years	29	12	59	9	26	14	32	12	196
2 „ 3 „	5	3	15	2	11	11	19	2	68
3 „ 4 „	7	1	10	2	4	3	3	0	30
4 „ 5 „	3	1	6	0	1	3	6	1	21
5 „ 10 „	1	0	4	1	3	0	2	0	11
Over 10 „	0	1	3	0	0	0	1	0	5
Total at all Ages ...	55	23	134	21	54	38	87	17	430

The following School was closed during the year on account of the prevalence of Measles.

Knowsley Road Infants School, for three weeks, from February 14th to March 7th.

SCARLET FEVER.

Scarlet Fever was again prevalent in St. Helens during 1898, though by reference to the following Tables it will be seen that the epidemic is gradually dying out. 385 cases of this disease were notified, of which 24 terminated fatally, giving a death-rate of ·28 per 1000.

In England and Wales the death-rate was ·11 per 1000.

On page 24 will be found the number of deaths from Scarlet Fever for each year since 1871. These figures, however, indicate very imperfectly the degree of prevalence of the disease, as it is evident in St. Helens that the degree of virulence of Scarlet Fever varies much from year to year.

The cases of sickness and death, together with the death-rates from Scarlet Fever during each year since the disease was notifiable are set out in the following Table.

	1890	1891	1892	1893	1894	1895	1896	1897	1898
Cases of Sickness ..	1234	210	438	237	342	220	1310	914	385
No. of Deaths ..	181	24	18	6	14	9	59	44	24
Death Rate per 1000..	2·52	·33	·24	·08	·18	·11	·72	·53	·28
Mortality per 100 Cases	14·6	11·4	4·1	2 5	4·0	4·0	4·5	4·8	6·2

AGE INCIDENCE.

The following Table shows the ages at which the notified cases and deaths occurred.

SCARLET FEVER NOTIFICATIONS AND DEATHS AT VARIOUS AGES.

Ages	MONTHS. 0–3	3–6	6–9	9–12	YEARS. 1–2	2–3	3–4	4–5	5–6	6–7	7–8	8–9	9–10	10–15	15–20	20 & over	Total.
Total No. of Cases Notified	1	0	3	7	22	40	45	44	45	29	27	29	26	41	12	14	385
	Under 1 year, 19								156								
	Under 5 years, 162																
Sickness Rate per 1000 of the Population at each age	Under 1 year, 3·8				8·6	15·7	18·3	18·8	14·2					4·0	1·3	·33	4·5
	Under 5 years, 12·7																
Deaths from Scarlet Fever at various ages	0	0	1	1	5	8	6	1	1	0	1	0	0	0	0	0	24
Percentage or Case Mortality ...	0	0	33·3	14·2	22·7	20·0	13·3	2·2	2·2	0	3·7	0	0	0	0	0	6·4
	Under 1 year, 18·1																
	Under 5 years, 13·5																

SEASONAL INCIDENCE.

The following Table shows the periods of greatest prevalence of Scarlet Fever during the past 6 years in St. Helens.

Year.	January	February	March	April	May	June	July	August	September	October	November	December	Total
1893	33	33	16	23	12	3	10	13	7	21	31	35	237
1894	16	37	61	58	39	24	17	27	16	14	12	21	342
1895	7	12	19	19	18	19	8	19	12	12	39	38	222
1896	32	53	38	41	80	87	78	105	126	249	220	201	1310
1897	123	91	118	82	70	39	40	41	68	89	78	75	914
1898	**63**	**44**	**35**	**26**	**13**	**23**	**23**	**26**	**32**	**32**	**32**	**39**	**385**

It will be noted that the influence of the epidemic of 1896 and 1897 was felt in the earlier months of the present year; the minimum was reached in May, and from then on, the notifications remained at a fairly even level, though with a slightly upward tendency.

DISTRIBUTION OF SICKNESS CASES.

Wards.	No. of Cases of Sickness from Scarlet Fever.								
	1890	1891	1892	1893	1894	1895	1896	1897	1898
Eccleston, North ...	209	48	58	32	29	12	231	188	54
Eccleston, South ...	73	14	28	35	29	19	214	90	37
Central	141	20	29	24	43	8	54	73	17
Windle, North ...	115	18	35	10	81	24	131	102	45
Windle, South ...	78	23	27	27	21	19	152	78	36
Hardshaw ...	186	25	43	17	46	45	163	89	75
Sutton, East ...	244	46	118	13	19	35	141	108	37
Sutton, West ...	105	9	48	35	35	25	103	90	18
Parr	83	7	52	44	39	35	121	96	66
Totals ...	1234	210	438	237	342	222	1310	914	385

It will be noted that Hardshaw had a larger number of cases than any other Ward, and that all the Wards had fewer cases than in the preceding year.

TYPE OF THE DISEASE.

From the Table on page 37 it will be seen that the epidemic of 1898 was not nearly so virulent as that of 1890, and was very similar to that of the preceding year. One case died in every 6·8 attacked in 1890, 1 in every 22·5 in 1896, 1 in 20·75 in 1897, and 1 in every 16·04 in 1898.

While the general type of the disease was a mild one, yet there occurred several cases of a most malignant type.

In this respect it must always be remembered that Scarlet Fever is a disease which is frequently followed by sequelæ, which prove fatal long after all evidence of the Scarlet Fever attack has gone.

Also, that in many other cases the sequelæ cause permanent damage to health.

NUMBER OF CASES PER HOUSE.

The 385 cases occurred in 312 houses.

In 266 houses, one case only occurred.
In 31 houses, two cases occurred.
In 8 houses, three cases occurred.
In 5 houses, four cases occurred.
and in 1 house, eight cases occurred.

In the 312 houses in which tho 385 cases of Scarlet Fever occurred in 1898, there were 492 children under 12 years of age, who were said not to have had the disease previously, and who did not contract it during the year.

These figures are of some value, because they confirm the experience gained in visiting cases of Scarlet Fever, namely, that in probably over 60 per cent. of the households attacked, reasonable care is taken to prevent diffusion of the infection, and, also, that a comparatively small number of unrecognised or uncared-for cases are capable of spreading the disease widely.

PRECAUTIONS ADOPTED TO PREVENT THE SPREAD OF SCARLET FEVER.

(1) *Visit of District Inspector.*—Every case of Scarlet Fever is visited within a few hours of the receipt of the notification by the District Inspector. By this means information is obtained as to the causation, etc., of the disease, and if the information obtained makes it seem necessary, the Medical Officer of Health also visits the case. The Inspector is also enabled to give instructions for the prevention of the spread of the disease, and reads over and leaves for this purpose printed instructions.

(2) *Removal to Hospital.*—Where practicable, and wherever the surroundings of the patient make it necessary, patients are removed to the

Sanatorium. It is obviously impossible to remove all cases of Scarlet Fever to Hospital during an epidemic period, and during such a time only the most urgent cases are removed, but in non-epidemic times, it is possible by the prompt removal of from 70 to 80 per cent. of the cases to prevent the occurrence of an epidemic. During the early part of the year when Scarlet Fever was present in St. Helens in a more or less epidemic form, cases were chosen for removal to Hospital on account of some special danger of spreading infection, *e.g.*, cases occurring in houses attached to shops, laundries, etc.; cases in houses where the mother was approaching her confinement; cases where the house contained a large number of children. During the latter end of the year, however, it was possible to remove a far higher proportion of cases.

During 1898, 180 cases were removed and treated in hospital, and 205 cases were treated at home.

The effect of hospital treatment, quite apart from taking away the infectious person from the household, was most beneficial to the health of the person. Notwithstanding that many cases were removed on account of their severity, the mortality at the hospital was little more than one half of that among cases treated at home.

It was as follows:—

1898—Cases treated at home—percentage mortality, 7·3.
1898—Cases treated at Sanatorium „ „ 5·0.

(3) *Disinfection.*—A supply of disinfectants is sent to every house every second or third day during the whole time the infection exists, and repeated visits are made to see that these are being properly used, and that the necessary precautions are carried out.

Every house was disinfected at the termination of the case, or after its removal to the Sanatorium. The disinfection consisted (*a*) in carting away all bedding, clothing, &c., which had been exposed to infection, and having these passed through a Warner's Disinfector. (*b*) After making the usual arrangements in the infected room, sulphur was burned. (*c*) Instructions were left that all floors, furniture, &c., should be thoroughly washed with a disinfectant.

As to the efficiency of the above means of disinfection, the following statistics have been worked out. The total number of houses in which Scarlet Fever occurred was 312. In some of these the house was disinfected immediately after the patient or patients were removed to hospital; in the rest of them, after the recovery of the patient or patients. In 10 houses, fresh cases occurred within 7 days after the disinfection. All of these may be looked upon as cases having received infection before the disinfection of the premises was done. In 8 other cases, second cases occurred at periods varying from 7 days to 6 weeks after the disinfection. That is to say—that assuming the infection in each of these cases to have been derived from imperfectly disinfected articles within the house, and not from fresh infection imported, the disinfection was more or less imperfect in 2·07% of the cases.

When it is remembered how exceedingly tenacious of life is the infection of Scarlet Fever, and how many are the ways in which it is capable of being spread, the above results are most satisfactory.

More importance ought to be attached to the washing of the furniture, floors, and paint work in infected houses. It has often been exceedingly difficult to get this done, and very often it was done in the most perfunctory manner.

(4) *Exclusion from School.*—All children in an infected house are kept from School for a period of at least six weeks from the commencement of the last attack, and longer if necessary.

HOSPITAL RETURN CASES OF SCARLET FEVER.

By this term is meant those cases of Scarlet Fever which occur in houses after the return home of cases of Scarlet Fever from hospital, and which may be due to the importation of infection from the hospital.

These cases are of the greatest importance to the Sanitary Authority, as it has been decided recently that certain liabilities rest with the Authority in regard to them. Such cases occur at every hospital where Scarlet Fever is treated; and at the present moment there is no recognised method of reducing their number.

The Medical Officer of Health of Manchester, who has carefully investigated the subject, puts forward what appears to be the most probable explanation of return cases—namely, that a child, coming from a Scarlet Fever Ward, carries in the nasal cavities certain infective material, notwithstanding that the peeling of the skin, and discharge from ears and nose have ceased, and that the utmost care has been taken to disinfect all clothing.

The number of cases are so small annually as not materially to militate against the use of a Hospital for the isolation of cases of Scarlet Fever, and it is probable that some means may be found of lessening the number of such cases.

During 1898 only one case occurred in a house within 10 days of the return of other cases from hospital—a most satisfactory result.

CONCLUSION.

The experience of the past few years has shown that in a cottage population such as St. Helens, one of the most important means of preventing the spread of the disease is to have ample accommodation for cases during non-epidemic times.

PROSECUTIONS.

The following prosecutions were instituted during the year for exposing infected persons or clothing :—

23rd May, 1898.—M.A. Exposing child infected with Scarlet Fever in street. Fined 5/- and costs.

31st October, 1898.—S.J. Exposing child infected with Scarlet Fever in street. Fined 5/- including costs.

DIPHTHERIA.

The death-rate from this disease was 0·18 per 1000 of the population of St. Helens during 1898. In England and Wales it was 0·24 for the same period

The following Tabular Statements show the deaths and cases of sickness per annum, and the distribution of the cases of sickness.

Year.	1886	1887	* 1888	1889	* 1890	1891	1892	1893	1894	1895	* 1896	* 1897	1898
Cases of Sickness	Before Notification Act.				104	69	81	79	86	66	72	66	60
Deaths	10	11	21	29	13	9	12	18	9	8	17	20	16
Fatality	Before Notification Act.				12·5	13·0	14·8	22·7	10 4	12·1	23·6	30·3	26·6

Distribution of Cases of Sickness from Diphtheria and Membraneous Croup.

Wards.	1890	1891	1892	1893	1894	1895	1896	1897	1898	Total
Eccleston, North ...	8	8	14	9	7	10	6	9	4	75
Eccleston, South ...	9	3	3	6	8	5	1	4	4	43
Central	5	9	5	7	5	3	6	4	4	48
Windle, North ...	12	15	6	13	20	13	12	6	8	105
Windle, South ..	23	10	15	6	3	6	9	6	2	80
Hardshaw ...	12	4	6	16	9	10	12	14	10	93
Sutton, East ...	17	8	10	15	9	4	6	9	10	88
Sutton, West ..	8	7	12	4	10	6	10	3	5	65
Parr	10	5	10	3	15	9	10	11	13	86
Totals	104	69	81	79	86	66	72	66	60	713

The number of notified cases and the percentage mortality at each age group was as follows:—

Age.	Number of Cases.	Percentage Mortality.
Under 1 year	2	100%
1 and under 5 ..	14	78·57%
5 „ 10 ...	13	15·38%
10 and upwards ...	31	3·22%

BACTERIOLOGICAL DIAGNOSIS OF DIPHTHERIA.

The work commenced in 1893 of aiding the Medical Attendant in diagnosing doubtful cases by the bacteriological examination of a piece of membrane or of a swabbing from the throat was continued during the year. It is to be hoped that a more extended use may be made of this undoubted aid to diagnosis.

With the increased accommodation now available at the Borough Sanatorium, it will be possible to isolate cases of this disease. Only one, a severe case, requiring tracheotomy, was admitted during the year. The child made a rapid and most satisfactory recovery.

WHOOPING COUGH.

This disease caused 34 deaths during the year, equal to a death-rate of 0·40 per 1000, as against 0·39 per 1000 in the preceding year.

In England and Wales the rate was 0·31 per 1000 during 1898.

In former years the deaths from this disease were as follows:—

1884	1885	1886	1887	1888	1889	1890	1891	1892	1893	1894	1895	1896	1897	1898
9	53	41	28	61	15	68	29	31	18	61	14	78	33	34

The deaths were all of children under 6 years of age, and were as follows:—

0	to	3	months	...	...	...	1
3	„	6	„	...	...	...	2
6	„	12	„	...	...	...	7
1	„	2	years	...	...	...	20
2	„	3	„	...	...	...	1
3	„	4	„	...	...	...	1
4	„	5	„	...	...	...	1
5	„	6	„	...	...	...	1

The cases were distributed over the Borough as follows :--

Eccleston, North	4
Eccleston, South	2
Central	1
Windle, North	2
Windle, South	2
Hardshaw	9
Sutton, East	7
Sutton, West	1
Parr	6

The number of deaths in each Quarter of this highly infectious disease was as follows :—

5 deaths occurred in the 1st Quarter.
9 ,, ,, ,, 2nd ,,
7 ,, ,, ,, 3rd ,,
13 ,, ,, ,, 4th ,,

At the present time practically nothing is done in St. Helens or in other towns to reduce the mortality and the serious damage to health which this disease causes. There are features in the natural history of the disease which render the usual preventive measures unavailable to a large extent. When children suffering from this disease are everywhere allowed to go about in public places, it is not to be wondered at that so many cases occur.

TYPHOID FEVER.

The death-rate from Typhoid Fever was at the rate of **0·36** per 1000, being 0·15 below the mean for the previous 10 years. In England and Wales the rate was 0·18 per 1000.

The number of cases of sickness from this disease was **136**, being 11 below the number reported last year, and 86 below the mean number reported annually since 1889. As in the previous year, though the number of cases was small, the mortality was relatively large—the case mortality being at the rate of 22·0 per cent., as against 22·4 per cent. in the preceding year (see Table on page 48).

The following Table shows the number of cases of sickness and the death-rates from Typhoid Fever in each year since 1877.

Year.	No. of Cases of Sickness.	Death Rate.	Year.	No. of Cases of Sickness.	Death Rate.
1877	No. of Cases not known.	1·46	1888	—	·32
1878		·74	1889	558	1·18
1879		·61	1890	150	·34
1880		·70	1891	185	·36
1881		·97	1892	138	·34
1882		·55	1893	315	·68
1883		·51	1894	172	·33
1884		·53	1895	257	·74
1885		·11	1896	166	·49
1886		·43	1897	147	·39
1887		·51	1898	136	·36
Mean.		·64	Mean.	222	·50

It will be noted that in the present year, a smaller number of cases of Typhoid Fever was notified than in any year since the adoption of the Infectious Diseases Notification Act in 1889.

The following Table shows the distribution of deaths in St. Helens during the past 13 years.

WARDS.	1886	1887	1888	1889	1890	1891	1892	1893	1894	1895	1896	1897	1898	Total.
Eccleston, North	1	5	7	16	6	—	1	4	2	6	4	3	4	62
Eccleston, South	—	1	1	8	4	2	3	5	3	5	2	1	—	38
Central	5	7	3	7	3	4	1	2	2	2	3	—	3	43
Windle, North..	5	2	2	7	2	3	—	6	2	3	7	4	1	46
Windle, South..	6	3	1	15	2	1	5	2	—	3	3	—	2	49
Hardshaw.....	4	5	2	4	3	2	2	4	5	1	4	3	2	45
Sutton East....	3	4	1	12	2	1	3	3	1	2	2	—	—	39
Sutton, West* ..	1	3	3	9	2	12	6	18	10	34	10	20	16	149
Parr	3	4	2	3	—	1	4	8	1	3	5	2	2	42
Totals	28	34	22	81	24	26	25	52	26	59	40	33	30	513

* Including deaths in the Sanatorium.

CHART SHOWIHG RELATIONSHIP BETWEEN CASES OF TYPHOID FEVER AND THE MEAN TEMPERATURE OF THE SOIL (AT 4 FEET) AND OF THE AIR AND ALSO LEVEL OF GROUND WATER DURING EACH WEEK IN 1898.

JANY. | FEBY. | MARCH | APRIL | MAY | JUNE | JULY | AUGUST | SEPTR. | OCTR. | NOVR. | DECR.

1 8 15 22 29 | 5 12 19 26 | 5 12 19 26 | 2 9 16 23 30 | 7 14 21 28 | 4 11 18 25 | 2 9 16 23 30 | 6 13 20 27 | 3 10 17 24 | 1 8 15 22 29 | 5 12 19 26 | 3 10 17 24 31

SUB SOIL WATER — INS. 32 34 36 38 40 42 44 46 48 50 52 54 56 58

Temperature — 68° 66° 64° 62° 60° 58° 56° 54° 52° 50° 48° 46° 44° 42° 40° 38° 36° 34° 32° 30° 28° 26° 24° 22° 20°

GROUND WATER

SOIL TEMP.

AIR TEMP.

68¼

INCHES FROM THE GROUND

Cases of Typhoid Fever per Week. 24 23 22 21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1

CHART NO. 2.

TYPHOID SICKNESS (St. HELENS 1893 TO 1898 INCL.)

CHART No. 3.

RATES PER 10,000 PER ANNUM.

	No. ECCLN.	So. ECCLN.	CENTRAL	NoWINDLE	SoWINDLE	HARDSHW	E.SUTTON	W.SUTTON	PARR	WHOLE BOROUGH
189	3 4 5 6 7 8	3 4 5 6 7 8	3 4 5 6 7 8	3 4 5 6 7 8	3 4 5 6 7 8	3 4 5 6 7 8	3 4 5 6 7 8	3 4 5 6 7 8	3 4 5 6 7 8	3 4 5 6 7 8
80										
70										
60										
50										
40										
30										
20										
10										

As in former years the largest number of deaths occurred in the 3rd and 4th Quarters, as is seen below.

Year.	Deaths 1st Qtr.	Deaths 2nd Qtr.	Deaths 3rd Qtr.	Deaths 4th Qtr.	Total.
1891	3	6	16	11	36
1892	5	6	6	8	25
1893	12	1	17	22	52
1894	13	2	4	7	26
1895	12	2	19	26	59
1896	4	5	15	16	40
1897	3	4	16	10	33
1898	**5**	**3**	**12**	**10**	**30**
Totals	57	29	105	110	301

The distribution of Typhoid Fever is shown in the accompanying Table, where also the number of cases occurring in each of the months of the preceding 8 years is set out. It will be noted that the largest number of cases occurred in the months of September and October.

Year.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1890	20	4	7	4	4	12	10	15	31	23	15	5	150
1891	5	5	18	17	11	3	4	31	32	30	16	13	185
1892	7	9	10	18	9	5	14	11	13	11	21	10	138
1893	10	11	18	0	3	10	26	41	73	70	34	19	315
1894	19	11	18	9	6	5	15	17	25	24	11	12	172
1895	9	9	10	2	9	9	12	37	42	43	53	22	257
1886	9	9	7	2	8	7	17	21	34	22	24	8	168
1887	6	11	7	4	5	4	2	43	27	15	18	5	147
1898	**6**	**4**	**8**	**7**	**4**	**6**	**7**	**10**	**27**	**32**	**16**	**9**	**136**
1st Qtr. 1898			**18**	2nd Qtr. 1898		**17**	3rd Qtr. 1898		**44**	4th Qtr. 1898		**57**	

The following Table shows the Distribution of the Notified Cases over the Borough during each year since the Infectious Diseases (Notification) Act, 1889, came into force.

Wards.	1889	1890	1891	1892	1893	1894	1895	1896	1897	**1898**	Total.
Eccleston, North	133	22	52	17	36	21	68	22	18	**17**	406
Eccleston, South	64	22	36	20	22	17	25	18	7	**15**	246
Central	46	14	9	12	19	16	27	14	13	**7**	177
Windle, North	46	16	11	13	51	29	26	34	40	**13**	239
Windle, South	67	10	26	22	40	12	24	19	9	**11**	239
Hardshaw	42	9	13	18	57	22	23	16	16	**16**	232
Sutton, East	66	14	8	19	10	26	8	5	5	**9**	170
Sutton, West	57	24	18	9	33	10	43	20	21	**7**	242
Parr	37	19	12	8	47	19	13	20	18	**41**	234
Whole Borough	558	150	185	138	315	172	257	168	147	**136**	2225

The Sickness rates per 1000 of the population in each Ward for the seven years, 1892 to 1898, are set out in the following Table.

SICKNESS RATES PER 1000 OF THE POPULATION IN EACH WARD.

WARDS.	1892	1893	1894	1895	1896	1897	1898
Eccleston, North ...	1·94	4 02	2·28	7·17	2·29	1·83	1·69
Eccleston, South ...	2 91	3·09	2·29	3·37	2·19	·83	1·75
Central	1·45	2·29	1·92	3·24	1·68	1·52	·80
Windle, North ..	1·96	7·57	3·74	2·97	3·71	4·27	1·36
Windle, South ...	2·59	4·67	1·39	2·78	2·18	1·01	1·21
Hardshaw	1·89	5·85	2·23	2·30	1·59	1·55	1·52
Sutton, East ...	2·44	1·23	3·03	·85	·55	·53	·94
Sutton, West ..	1·08	3·93	1·18	5·03	2·27	2·44	·76
Parr	·96	5·46	2·16	1·45	2·15	1·89	4·23
Whole Borough ...	1 88	4·20	2·23	3·23	2·07	1·78	1·60

It will be noted that North Windle, which formerly had an excessive number of cases, was during the present year fairly free from the disease. During 1898 the chief incidence of the disease was manifested in Parr.

The following Table shows the ages at which the various cases of Sickness and Deaths from Typhoid Fever occurred.

	Under 5 Yrs.	5 to 15	15 to 25	25 to 35	35 to 45	45 to 55	Over 55	Total.
Cases of Sickness ..	11	36	38	28	16	4	3	136
Deaths ..	2	1	9	7	7	3	1	30
Percentage Mortality 1898 ..	18·1	2·7	23·6	25·0	43·7	75·0	33·3	22·0
Do. 1897 ..	23·0	12·1	19·4	35·4	25·0	30·0	25·0	12·4
Do. 1896 ..	14·2	13·9	20·7	38·2	36·8	0·0	60 0	23·8
Do. 1895 ..	9·0	15·0	24·6	34·0	36·3	22·2	100	22·9
Do. 1894 ..	16·6	7·0	14·8	16·1	28·5	30·0	100	15·1

The following Rates are calculated from the Weekly Returns sent to the Local Government Board. They show the number of cases of sickness from Typhoid Fever per 1000 of the population in each of the towns.

Town.	No. of Cases of Typhoid Fever notified.	Sickness—Rate per 1000 of the Population.	Town.	No. of Cases of Typhoid Fever notified.	Sickness—Rate per 1000 of the Population.
London	3099	·68	Manchester ..	656	1·21
West Ham	467	1·62	Salford	400	1·85
Croydon	64	·51	Oldham	68	·45
Plymouth	41	·44	Burnley	119	1·08
Bristol	113	·35	Blackburn	230	1·72
Cardiff	94	·52	Preston	239	2·05
Swansea	105	1·02	Huddersfield ...	79	·77
Wolverhampton ..	123	1·39	Halifax	75	·77
Birmingham ..	683	1·33	Bradford	290	1·27
Norwich	246	2·20	Leeds	534	1·28
Leicester	252	1·20	Sheffield	914	2·56
Nottingham ..	425	1·79	Hull	306	1·33
Derby	162	1·54	Sunderland ...	448	3·11
Birkenhead... ...	234	2·06	Gateshead	120	1·15
Liverpool	863	1·30	Newcastle-on-Tyne ...	296	1·32
Bolton	243	1·98	**ST. HELENS ...**	**136**	**1·60**

It will be seen that the sickness rate for St. Helens was higher than 21 of the 31 towns set out above, and lower than 10, viz.: West Ham, Norwich, Nottingham, Birkenhead, Bolton, Salford, Blackburn, Preston, Sheffield, and Sunderland. Two years ago, St. Helens headed the list, while last year only three towns had a higher rate.

Typhoid Fever has long been regarded as the special scourge of St. Helens, and to its prevention and limitation the efforts of the Health Committee have been directed. It would seem that at last there are signs that these efforts are bearing fruit. In no year since the adoption of the Notification Act have so few cases been notified, and it seems probable that this number would have been far smaller but for the outbreak in Parr, to which subsequent reference is made.

In 1898, as in previous years, a large proportion of cases occurred in privy midden houses and defective drains were found in many cases. Every case was thoroughly investigated and the drains of the house were tested. In no case could the infection be traced to milk or water, and in the large majority of cases the source of infection was not traceable to a previous case.

Chart No. 2 is appended—as in former years—to show the weekly number of cases of Typhoid Fever, the temperature of the soil at four feet, the mean temperature of the air, and the level of the subsoil water in inches from the surface. Again will be noticed a relationship between the soil temperature and the rise in the number of enteric cases. The curve of the level of the subsoil water for the year is most remarkable, the level falling steadily from the beginning of June to the end of October, when it began to rapidly rise, such rise being followed by a slight recrudescence of Typhoid Fever. It would seem probable that the low level of the subsoil water, during the months when enteric fever is usually most prevalent, was a factor of some importance in the comparative immunity from enteric fever which the Borough enjoyed during the year.

Chart No. 3 shows graphically the enteric fever rates for each Ward, and also for the whole Borough, for the years 1893-98. The usual spot map is appended showing the distribution of the cases during 1898.

On studying Chart No. 3, together with the map, some interesting points are brought out. First it will be noted that North Windle, which since the addition of the Dentons Green district in 1893, has invariably had a high enteric fever rate, has this year a lower rate than four of the other Wards, whilst Parr takes its place at the head of the list. The high rate in this latter Ward was due entirely to an outbreak in September and October in a limited area, with Fleet-lane as its centre. The first cases occurred in some houses, the drainage from which passed across the road to a ditch on the opposite side, which ultimately flowed into a cesspool in the adjoining field. There can be little doubt that this ditch became infected with enteric bacilli, and that in the dry hot weather at the end of August and beginning of September, the infected material in the shape of dust became disseminated around and caused the subsequent cases. All that could be done, was done; the ditch was cleaned out and disinfected on more than one occasion, but, unfortunately, the mischief had been already done. It is satisfactory to be able to state that the ditch is now filled up, the drainage being removed through a properly laid drain. A somewhat similar outbreak occurred in the same locality in 1893. Such outbreaks as the one which has been briefly described above are always liable to occur until a proper drainage scheme is provided for the outlying portions of the Borough. A drainage scheme for Sutton and Parr, by means of which all existing drains may be

taken out of the brook and the numerous ditches into which they at present enter, and carried to the outfall at Double Locks, is, in my opinion, the most pressing sanitary need of St. Helens. It is a matter for congratulation that the Health Committee have decided to proceed forthwith with the scheme. I would again urge its great importance.

A far higher percentage of cases of Enteric Fever was removed to the hospital than in former years, 44 per cent. of the cases availing themselves of the privilege.

By reference to the Table showing the work done by the Inspectors on page 71, it will be noted that increased attention has been paid to the testing of drains during the past year. In November last I presented to you a short report on the necessity of a house to house test of the drains in the Borough. Consequent on that you authorised the employment of an additional Inspector for this purpose, and I have great hopes that the work done by him will confer lasting benefit on the Borough, especially in reducing the large number of Enteric Fever cases which still occur.

The precautions adopted to prevent the spread of the disease were the same as in former years, namely (1) enquiry as to origin of case and the existence of insanitary conditions in the house; (2) the removal, by means of special pails, of all infective and infected material, twice or thrice weekly; (3) the supply of disinfectants twice a week, and the final disinfection of the premises; and (4) the removal of the patient, when practicable, to hospital.

The diagnosis of Enteric Fever by the serum test was extensively employed during 1898, almost every case notified, besides numerous other doubtful cases, being examined. It was often found of great value in confirming the clinical diagnosis. The extended observations made on this test during the past few months have more than justified one's earlier expectations. There seems to be little doubt that in it, one has at once a rapid and at the same time a certain means of diagnosing obscure cases of Enteric Fever. It is hoped that a still more extended use may be made of this test during the coming autumn.

DIARRHŒA.

The death-rate from Diarrhœa in St. Helens during 1898 was at the rate of **1·65** per 1000 per annum. In England and Wales it was ·95 per 1000.

It will be noted that this rate is the highest since 1893, being slightly higher than in the previous year. The rate for England and Wales was, however, also largely increased, and it is probable that the favourable climatic conditions are mainly responsible for this increase.

The death-rates from Diarrhœa in St. Helens have fluctuated very much from year to year during the past 27 years, as will be seen in the following Table.

The form of Diarrhœa, to which the statistics in this report chiefly refer, is commonly known as epidemic or Summer Diarrhœa, and is undoubtedly a preventible disease of microbial origin The growth of the organism is fostered by filth and an organically polluted soil. The method of infection is probably by means of food, errors in diet preparing the way for the reception of the microbe, or the food itself being infected with the germs.

In the following Table are placed, side by side, certain statistics relating to Diarrhœa and Typhoid Fever, and also certain meteorological statistics.

YEAR.	Total Deaths from Diarrhœa.	Total Deaths from Typhoid and Continued Fever.	Death Rate from Diarrhœa per 1,000.	Death Rate from Typhoid & Continued Fever per 1,000.	Death Rate from Diarrhœa in England and Wales.	Mean Temperature of the Air for the year.	Rainfall at Eccleston Hill.
1871	89	28	1·96	·61	1·09	46·9	25·0
1872	65	24	1·39	·51	·99	49·3	44·3
1873	79	24	1·65	·50	·96	48·2	24·9
1874	110	25	2·25	·51	·92	48·6	27·8
1875	101	65	2·02	1·30	1·02	48·4	30·1
1876	86	40	1·69	·78	·91	48·4	36·3
1877	74	34	1·41	1·46	·61	48·3	41·7
1878	132	40	2·45	·74	1·00	48·5	35·5
1879	52	34	·94	·61	·45	45·5	24·3
1880	130	40	2·30	·70	1·17	48·2	29·7
1881	76	56	1·31	·97	·55	46·9	36·7
1882	85	33	2·12	·55	·65	48·5	39·7
1883	69	31	·89	·51	·59	48·0	34·8
1884	131	33	2·12	·53	·27	49·2	26·9
1885	56	7	·89	·11	·49	46·9	32·7
1886	122	28	3·01	·43	·89	47·3	33·0
1887	101	34	1·53	·51	·72	47 0	21·1
1888	65	22	·96	·32	·45	46·7	28·1
1889	85	81	1·27	1·18	·64	47·8	25·8
1890	74	24	1·05	·34	·60	47·8	27·0
1891	78	26	1·08	·36	·46	47·2	32·3
1892	84	25	1·14	·34	·50	46·6	34·8
1893	168	52	2·20	·68	·95	50·1	25·7
1894	35	26	·48	·33	·35	48·9	33·3
1895	101	59	1·27	·74	·88	47·3	28·0
1896	63	40	·77	·49	·56	48·7	31·8
1897	133	33	1·60	·39	·85	48·6	34·0
1898	**140**	**31**	**1·65**	**·36**	**·27**	**49·7**	**28·9**

CHART No. 4.

CHART SHOWING RELATIONSHIP BETWEEN DEATHS FROM DIARRHŒA AND THE MEAN TEMPERATURE OF THE SOIL (AT 4 FEET) AND OF THE AIR AND ALSO LEVEL OF GROUND WATER DURING EACH WEEK IN 1898.

SUB. SOIL WATER — Temperature

JANY. | FEBY. | MARCH | APRIL | MAY | JUNE | JULY | AUGUST | SEPTR. | OCTR. | NOVR. | DECR.

1 8 15 22 29 | 5 12 19 26 | 5 12 19 26 | 2 9 16 23 30 | 7 14 21 28 | 4 11 18 25 | 2 9 16 23 30 | 6 13 20 27 | 3 10 17 24 | 1 8 15 22 29 | 5 12 19 26 | 3 10 17 24 31

INS. | °

32 68 | 34 66 | 36 64 | 38 62 | 40 60 | 42 58 | 44 56 | 46 54 | 48 52 | 50 50 | 52 48 | 54 46 | 56 44 | 58 42 | 40 | 38 | 36 | 34 | 32 | 30 | 28 | 26 | 24 | 22 | 20

GROUND WATER

SOIL TEMP.

AIR TEMP.

68¼

INCHES FROM THE SURFACE

Weekly number of Deaths from Diarrhœa.

24 23 22 21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1

As in former years by far the larger number of deaths occurred during the 3rd Quarter, as is seen below :—

DEATHS IN ST. HELENS FROM DIARRHŒA.

	1889	1890	1891	1892	1893	1894	1895	1896	1897	1898	Mean of 10 years.
January ...	2	1	2	2	1	0	0	1	2	0	
February ...	0	0	1	3	0	0	0	0	1	0	
March ...	1	0	4	2	2	2	0	0	0	1	
1st Quarter ...	3	1	7	7	3	2	0	1	3	1	2·8
April ...	3	2	1	2	1	0	1	3	0	0	
May ...	2	0	2	1	5	0	1	2	2	2	
June ..	2	3	4	2	32	0	4	6	3	4	
2nd Quarter ...	7	5	7	5	38	0	6	11	5	6	9·0
July ...	28	3	4	10	71	5	29	22	13	16	
August ...	23	19	11	29	32	14	39	15	79	54	
September ..	17	26	30	25	21	7	12	9	25	51	
3rd Quarter ...	68	48	45	64	124	26	80	46	117	121	73·9
October ..	3	15	13	4	2	8	12	3	3	9	
November ...	2	4	5	3	1	1	3	1	4	3	
December ..	2	1	1	1	0	1	0	1	1	0	
4th Quarter ...	7	20	19	8	3	10	15	5	8	12	10·7
Total each year	85	74	78	84	168	38	101	63	133	140	96·4

The ages at death of the 140 persons who died of Diarrhœa during 1898 are shown in the following Table, as well as the similar returns for the six previous years.

AGE.	1892	1893	1894	1895	1896	1897	1898	Total.
0 to 3 months	14	34	8	19	7	15	13	110
3 „ 6 „	13	36	5	19	16	24	36	149
6 „ 12 „	31	41	17	26	23	46	41	225
1 „ 2 years	14	35	4	33	7	26	31	150
2 „ 3 „	4	10	—	2	2	4	6	28
3 „ 4 „	—	—	—	—	1	6	4	11
4 „ 5 „	—	1	—	1	—	1	—	3
Over 5 „	8	11	4	1	7	11	9	51
Totals ...	84	168	38	101	63	133	140	727

Out of the 727 persons who died during these seven years, over 87 per cent. were under 2 years of age.

The different Wards in which the cases occurred, are shown in the following Table :—

Wards.	1892	1893	1894	1895	1896	1897	1898	Total.
Eccleston, North	11	32	9	18	10	23	36	139
Eccleston, South	6	14	4	7	5	16	6	58
Central	10	20	2	18	10	10	18	88
Windle, North ...	6	8	2	9	5	16	13	59
Windle, South ...	19	29	5	11	8	17	16	105
Hardshaw ...	8	12	5	11	13	16	11	76
Sutton, East ...	2	8	4	5	2	11	7	39
Sutton, West ..	11	23	3	11	5	14	15	82
Parr	11	22	4	11	5	10	18	81
Total ...	84	168	38	101	63	133	140	727

In October last, I presented a short interim report on the Diarrhœa Mortality during August and September, in which the conclusion was arrived at that Diarrhœa in St. Helens resulted from two main causes—namely—(1) pollution of the soil with organic matter, and (2) improper feeding. As a result of that report, you authorised me to obtain from the Registrar the addresses of all births occurring in St. Helens, in order that the Female Sanitary Inspector might visit such houses as from our knowledge of the locality seemed most in need of supervision, and might distribute and explain to them the directions with regard to the feeding of Infants. I have great hopes that this will prove of great benefit.

Of the 140 persons who died from Diarrhœa during 1898, 13 were under 3 months and 31 between 3 and 6 months old.

Particulars were obtained as to the method of feeding these children, as follows :—

Of those under 3 months who died, 76·92 per cent. were found to have been bottle-fed infants, and 23·07 per cent. breast-fed.

Of those between 3 and 6 months old who died, 83·33 per cent. were bottle-fed and 16·66 per cent. breast-fed.

Chart No. 4 is again appended. It shows the weekly number of deaths from Diarrhœa, with the corresponding air temperature and temperature of the soil at 4 feet, together with the level of the subsoil water.

The relationship between the temperature of the soil at 4 feet and the Diarrhœa Mortality is again most marked, Diarrhœa becoming epidemic when the soil temperature reached 54°, and dropping as the soil temperature dropped.

MINOR ZYMOTICS.

INFLUENZA.

Thirteen deaths were due to this disease in 1898. All of these, with one exception, were of persons between 15 and 85 years of age. In the previous years the deaths were—

Year.	1890	1891	1892	1893	1894	1895	1896	1897	1898
Deaths from Influenza ...	3	32	19	3	7	8	7	17	13

ERYSIPELAS.

Erysipelas caused 3 deaths among the 173 cases of sickness from this disease which were notified during the year.

The cases of sickness were distributed over the Borough as follows :—

WARDS.	1891	1892	1893	1894	1895	1896	1897	1898	Totals.
Eccleston, North ...	10	10	11	8	6	9	14	17	85
Eccleston, South ...	3	7	9	6	5	9	7	4	50
Central	6	9	12	6	3	6	17	13	72
Windle, North ...	4	4	5	12	12	15	11	12	75
Windle, South ...	8	8	10	4	3	14	19	10	76
Hardshaw	5	13	8	11	15	33	30	45	160
Sutton, East	9	6	16	12	5	18	18	15	99
Sutton, West	9	8	8	7	6	12	8	7	65
Parr	4	11	19	9	14	21	38	50	166
Total cases of Sickness	58	76	98	75	69	137	162	173	848
Total No. of Deaths in each year... ...	2	5	2	2	1	4	3	3	22

The percentage mortality was therefore 1·73% during 1898. During the previous seven years it was at the rate of 2·81%.

Comparing the notified cases of Erysipelas, Scarlet Fever, and Puerperal Fever during each month of the year, the following figures are obtained.

	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec	Total
Erysipelas	13	18	17	18	8	17	15	13	17	10	16	11	173
Scarlatina	63	41	35	26	13	23	23	26	32	32	32	39	385
Puerperal Fever ..	1	1	3	—	1	—	—	1	—	—	—	—	7

It has been said that the Erysipelas organism may be remotely, and perhaps very indirectly, related to that producing Scarlet Fever; it would, if such were the case, be expected that the monthly number of cases would relatively agree, but this is not found to be so.

Of the 173 cases of Erysipelas, 91 were in females and 82 in males.

In a considerable number of the cases, there was a history of one or more previous attacks of the same disease.

PUERPERAL FEVER.

Until some general agreement is come to as to what diseases are to be notified under the title of Puerperal Fever, the annual statistics on the subject must be misleading.

There were 7 cases notified during 1898, as compared with an average of 17·4 during the previous seven years.

The following shows the notified cases and deaths during the past eight years :—

	1891	1892	1893	1894	1895	1896	1897	1898
Cases of Sickness .	16	14	19	26	17	11	19	7
Deaths	15	7	10	6	9	7	10	4
*No. of Births to each Death	194	416	302	480	351	434	319	815

* This does not include Still Births, Abortions, &c , which are occasionally followed by Puerperal Fever.

BOROUGH SANATORIUM.

During the year the Hospital has once more been largely used—263 cases having been admitted. Of these, 182 were cases of Scarlet Fever, while 76 were cases of Enteric Fever.

For the first year since the establishment of the Sanatorium sufficient accommodation was provided to admit all cases desiring admission and all cases in which the surroundings rendered removal necessary.

The following shows the percentage of the notifiable infectious diseases treated in the Sanatorium :—

1890	...	8·4	per cent.	admitted	to the Sanatorium.
1891	...	18·4	,,	,,	,,
1892	..	17·1	,,	,,	,,
1893	...	18·65	,,	,,	,,
1894	...	22·50	,,	,,	,,
1895	...	40·21	,,	,,	,,
1896	...	18·3	,,	,,	,,
1897	...	20·1	,,	,,	,,
1898	...	**32·02**	,,	,,	,,

It will thus be seen that the percentage of admissions to notifications was very much better than in 1897.

The following Table gives the yearly number of admissions, &c., since the Sanatorium was opened in 1881 :—

Year.	No. remaining in Sanatorium on Dec. 31st.	Number Admitted.	No. who died in Sanatorium.	Total Days in Sanatorium of Patients.	Accommodation.
1882	—	9	3	—	Rooms in Peasley Vale, used as Wards and for Administrative purposes.
1883	—	14	1	—	
1884	—	36	6	—	
1885	—	9	0	—	
1886	—	17	3	—	
1887	—	38	11	—	
1888	—	25	4	—	
1889	—	116*	15	—	
1890	—	128†	20	—	Outbuildings converted into three Wards.
1891	—	89	10	—	
1892	—	134	15	—	
1893	—	150	25	—	
1894	19	182	22	6184	2 New Pavilions used in addition to above.
1895	44	259	54	8962	
1896	46	311†	15	16630	
1897	36	263	24	12955	
1898	—	**263**	**28**	**12742**	Large Pavilion and Observation Block opened.

* Enteric Fever Epidemic. † Scarlet Fever Epidemic.

Seventeen of the above 263 patients were admitted from Haydock.

Cases admitted during 1898.	Males.	Females.	Totals.	Deaths.	Average Duration of Cases in Sanatorium 1898.
					Days
Small Pox	0	0	0	0	0·0
Scarlet Fever	86	96	182	9	48·8
Diphtheria	0	1	1	0	24·0
Enteric Fever	50	26	76	17	37·1
Erysipelas	1	0	1	0	20·0
Puerperal Fever	0	1	1	1	4·0
Other Diseases ... ... (including Observation Cases)	0	2	2	1	8 0
	137	126	263	28	

The following shows the number of cases of each Notifiable Infectious Disease which was treated in the Sanatorium during 1898:—

Disease.	Total Cases in Borough.	Number of such removed to Sanatorium.	Percentage of Removals to Notifications.
Small Pox	0	0	0%
Scarlet Fever	385	180	46·7%
Diphtheria, &c.	60	1	1·6%
Typhoid Fever	136	61	44·8%
Puerperal Fever	7	1	14·3%
Erysipelas	173	1	·57%

It is satisfactory to note that a better percentage of removals to notifications was obtained than in any previous year.

On April 28th the Mayor, at the invitation of the Health Committee, formally opened the new blocks and additions to the administrative portions of the Hospital.

It may be interesting to sketch briefly the history of the Sanatorium from its commencement. Some 14 years ago the St. Helens Borough Sanatorium consisted entirely of the old house, now forming part of the administrative block. The house contained eight rooms, and stood in nearly four acres of land. It was presided over by an elderly person and her daughter, who combined the duties of caretaker and nurse. Each patient was charged at the rate of 1s. per day, and the average number of patients per annum was 17. In 1886 a Matron was appointed, and at the same time a portion of the outbuildings was converted into Wards, while in 1888 the remainder of the outbuildings was turned into another Ward and a Mortuary.

In 1891 the Council decided that the Hospital should be free, and from that time the yearly number admitted has greatly increased.

In 1893 it was again considered advisable to increase the accommodation, and two Pavilions, each containing two wards of six beds each, were added. At the same time nearly 5,000 square yards of additional land were purchased, and the whole of the land enclosed by a wall seven feet high. During this year the Disinfecting Apparatus was also added and the Laundry enlarged.

In March, 1897, the sanction of the Local Government Board for the borrowing of the necessary capital having been obtained, the additions to the Hospital were commenced.

The present additions consist of one large Pavilion containing two wards capable of holding 12 beds in each. An observation block consisting of two wards capable of holding two beds in each, and a large addition to the administrative block by means of which 15 bedrooms, nurses dining and sitting-rooms, servants' hall, storerooms, and dispensary were added.

The Laundry was also again enlarged—new drying closets and ironing-room being added.

Each Pavilion is provided in front with a glass verandah, the floor of which is formed of granolithic cement paving. Convalescent patients are thus enabled to sit outside in warm weather. The wards internally are plastered with cement, and all corners are carefully rounded off in order to prevent accummulation of dust.

Ventilation is provided for by means of the windows, opening at the top, and the floors of the wards consist of oak blocks. Each ward in the large pavilion is 72 feet long by 26 feet wide, giving a floor area per bed of 156 square feet, and a cubic air space of 2,000 cubic feet per patient.

The Hospital is now capable of accommodating from 70 to 80 patients.

The total cost of the Hospital since the commencement has been £14,120. Of this amount £1,300 has been paid off out of Sinking Funds. The whole of the works since 1884 have been designed and carried out by the Borough Engineer, Mr. Geo. J. C. Broom, M.I.C.E.

The work done by the Hospital during the past year was most beneficial to the public health, and one cannot speak too highly of the advantages accruing to the town by its extended use.

REMOVAL OF PATIENTS AND INFECTED CLOTHING.

No alteration in the procedure in regard to the above was made during the year.

The number of houses which required disinfection was very large; the services of the third disinfector were temporarily retained.

The following shows the work done during the past five years.

	1894	1895	1896	1897	1898
No. of Days on which the Disinfecting Apparatus has been used..	154	136	149	149	115
No. of Articles Disinfected—					
Beds	428	366	791	748	495
Pillows and Cushions	831	861	1241	1183	843
Blankets, Sheets, and Rugs ..	1261	1791	2144	1991	1819
Other Articles	330	366	619	1117	617
Clothing	1161	3643	6746	4429	3988
Hospital Clothing	1461	1394	507	358	395
Books from Library and Schools..	396	83	388	90	117
Total	6318	8474	12436	9916	8274
No. of Journeys of Van for Collection and Delivery	324	351	568	569	547
No. of Houses visited	1019	1024	1113	1861	1189

BACTERIOLOGICAL DEPARTMENT.

The work now done by this department necessitates that it should have a specific mention in the Annual Report. During the past year, 109 cases of Typhoid Fever were examined by means of Widal's serum reaction with the following result:—78 gave a positive reaction, thus confirming the provisional diagnosis made by the Medical attendant; while 31 gave a negative reaction. On more than one occasion by its means an earlier diagnosis than would otherwise have been possible was able to be made. There are evidences that even a more extended use is likely to be made of this test during the present year.

Over 30 suspected cases of diphtheria were examined with varying results, and several examinations of sputum for the presence of the Tubercle Bacillus were also made.

Lastly, the mixed water supplied by the Corporation was examined monthly, with satisfactory results, and the several wells were also tested separately at frequent intervals. It is satisfactory to note that each well showed on every occasion a satisfactory degree of Bacterial purity. Owing to the increased work of this department the accommodation and position of the present laboratory have proved most unsatisfactory, and it is earnestly to be hoped that before long a new and more commodious laboratory in a more central position will be provided. There can be little doubt that the work done by this department has been of the utmost importance to the public health interests of the town.

CLASS II.—PARASITIC DISEASES.

Two deaths in this Class, one in a child under 3 months old, and one between 35—45 years, occurred during the year, against four in 1897.

CLASS IV.—CONSTITUTIONAL DISEASES.

(*a*)—There were no deaths from Rheumatic Fever in 1898; against 6 in 1897, 6 in 1896, 7 in 1895, 10 in 1894, 6 in 1893, and 8 in 1892.

(*b*)—Cancer and Malignant Diseases.

The following shows the deaths from this group during the years 1885 to 1898.

1885	1886	1887	1888	1889	1890	1891	1892	1893	1894	1895	1896	1897	1898
20	14	8	22	25	27	37	23	36	36	42	35	40	44

Cancer and Malignant new growths in any organ are included in the above figures. It is probable that the apparent increase since 1891 is due more to methods of classification, and the better recognition of obscure cases than to any real increase of the disease.

(*c*)—Turercular Diseases.

Under this heading are included Tabes Mesenterica, Tubercular Meningitis, Hydrocephalus, Phthisis, and other Tubercular Diseases.

The following are the number of deaths during each of the past 7 years.

1892	1893	1894	1895	1896	1897	1898
160	160	164	179	179	173	162

The following shows the Distribution of cases.

WARDS.	1892	1893	1894	1895	1896	1897	1898	Totals.	Percentage in each Ward.
Eccleston, North ...	18	32	16	25	14	25	21	151	12·8
Eccleston, South ...	11	15	9	8	15	12	12	82	6·9
Central	17	11	12	16	19	20	14	109	9·2
Windle, North ...	18	6	17	19	26	15	18	119	10·1
Windle, South ...	19	13	16	15	11	19	17	110	9·3
Hardshaw	22	33	24	26	25	15	19	164	13·9
Sutton, East ...	18	13	15	22	11	15	12	106	9·0
Sutton, West ...	23*	24*	39*	33*	36*	42*	35*	232*	19·7
Parr	14	13	16	15	22	10	14	104	8·8
Totals	160	160	164	179	179	173	162	1177	100

* Including deaths from Tubercular Diseases occurring in Rainhill Asylum.

The mortality from Phthisis during 1898 was at the rate of 1·32 per 1000 of the population; this being 26 lower than the mean of the preceding 16 years. It will also be noted that the rate for St. Helens is lower than those of the County of Lancaster and of England and Wales.

DEATH RATES PER 1000 OF THE POPULATION FROM "PHTHISIS."

Years.	England and Wales.	County of Lancaster.	St. Helens.
1882	1·84	2·05	1·66
1883	1·87	2·14	1·60
1884	1·81	2·04	1·92
1885	1·75	1·95	1·58
1886	1·71	1·93	1·55
1887	1·59	1·77	1·36
1888	1·54	1·69	1·44
1889	1·54	1·64	1·41
1890	1·68	1·87	1·79
1891	1·59	1·81	1·93
1892	1·46	1·64	1·52
1893	1·46	1·65	1·45
1894	1·38	1·57	1·41
1895	1·29	1·59	1·60
1896	1·30	1·46	1·60
1897	1·53	1·51	1·44
1898	—	—	**1·32**
Mean ...	1·58	1·76	1·56

LOCAL DISEASES.

(*a*) DISEASES OF THE NERVOUS SYSTEM caused **207** deaths; against 179 in 1897, 191 in 1896, 178 in 1895, 172 in 1894, 191 in 1893, 187 in 1892, and 226 in 1891.

58 of the above 207 deaths were due to "Convulsions." Of these cases 47 were of children under 1 year of age. In this connection it should be noted that by far the larger number of the deaths in this group occurred in the Rainhill Asylum, and, therefore have only an indirect bearing on the Health Statistics of the Borough.

(*b*) DISEASES OF THE RESPIRATORY SYSTEM caused the following number of deaths.

1892	1893	1894	1895	1896	1897	**1898**
380	390	302	344	356	375	**332**

The deaths from Bronchitis and Punemonia are set out in the following Table

	1884	1885	1886	1887	1888	1889	1890	1891	1892	1893	1894	1895	1896	1897	**1898**
Bronchitis ...	170	299	210	221	177	219	232	300	243	215	154	164	171	186	**169**
Pneumonia .	104	115	83	103	87	133	172	218	141	147	118	118	154	167	**145**

The following figures show the distribution of cases of Bronchitis and Pneumonia over the Borough.

Wards.	Bronchitis.						Pneumonia.					
	1893	1894	1895	1896	1897	**1898**	1893	1894	1895	1896	1897	**1898**
Eccleston, North	23	31	22	21	25	**20**	14	5	17	12	9	**12**
Eccleston, South	12	11	15	18	17	**11**	9	6	13	14	12	**10**
Central	29	15	18	22	27	**24**	18	13	8	12	19	**5**
Windle, North	20	19	13	16	16	**16**	16	11	12	9	16	**15**
Windle, South	20	16	11	16	23	**16**	6	8	10	17	10	**11**
Hardshaw	42	23	21	18	27	**26**	23	15	15	18	32	**25**
Sutton, East	28	9	13	22	17	**12**	28	22	24	18	19	**10**
Sutton, West	24	22	25	17	14	**20**	17	24	30	31	34	**34**
Parr	17	17	26	21	20	**24**	14	14	19	23	16	**23**

Year.	Death Rates from all Respiratory Diseases per 1000.	
	England and Wales.	St. Helens.
1883	3·67	5·52
1884	3·34	4·51
1885	3·73	6·72
1886	3·64	4·82
1887	3·62	5·31
1888	3·50	4·54
1889	3·30	5·37
1890	4·12	5·78
1891	4·47	7·81
1892	3·96	5·18
1893	3·60	5·17
1894	3·02	3·89
1895	3·47	4·32
1896	2·98	4·38
1897	2·96	4·51
1898	—	**3·91**
Mean	3·55	5·09

(*c*) Diseases of the Digestive System caused **154** deaths; against 148 in 1897, 150 in 1896, 146 in 1895, 115 in 1894, 147 in 1893, and 132 in 1892.

(*d*) Diseases of the Urinary System caused **24** deaths; against 28 in 1897, 25 in 1896, 33 in 1895, and 17 in 1894.

(*e*) Diseases of the Reproduction System caused **13** deaths last year; against 15 in 1897, 10 in 1896, 10 in 1895, and 12 in 1894.

DEATHS FROM VIOLENCE.

(*a*) Deaths from Accident or Negligence numbered **50** during 1898; against 45 in 1897, 53 in 1896, 52 in 1895, and 58 in 1894.

(*b*) There was **1** Death from Homicide during the year; the only other deaths under this heading during the previous four years being 2 in 1896.

(*c*) Suicide caused **5** deaths during 1898; against 3 in 1897, 6 in 1896, 1 in 1895, and 7 in 1894.

The death-rate from violence is therefore ·66 as compared with ·60 per 1,000 in England and Wales.

DEATHS FROM ILL-DEFINED AND NOT SPECIFIED CAUSES.

148 deaths occurred under this heading during the year, being made up as follows:—Debility and Atrophy 74 deaths, Marasmus 72, mortification 1, and Other Causes not Specified 1 death. The deaths for the previous 4 years under the same heading were –136 in 1897, 132, in 1896, 169 in 1895, and 142 in 1894.

SANITARY STAFF.

This consists of—

The Medical Officer of Health.
Chief Inspector of Nuisances ... } These Offices are held
Canal Boats Inspector ... ... } by the Surveyor.
Four Male Assistant Nuisance Inspectors.
One Female ,, ,, ,,
A Meat Inspector.
An Inspector under the Sale of Food and Drugs Act.
One Clerk.
Two Disinfecting Men.
One Laboratory Attendant.

GENERAL SANITARY WORK DURING 1898.

At the fortnightly meetings of the Health Committee a report was presented dealing with the Health Statistics for the previous fortnight, and in these reports special attention was drawn to points requiring consideration.

The following special reports were also submitted during the year:—

Report on the Public Health Congress at Dublin.
,, ,, Diarrhœa Mortality during the summer of 1898.
,, ,, Necessity for Systematic Drain Testing.

WATER SOFTENING WORKS.

Samples have been taken from these works daily, and tested as to their hardness by the Medical Officer of Health. Each sample is obtained by allowing the softened water to drop for twenty-four hours into a glass vessel. At the end of this time the contents are well mixed, and the sample taken. In this way a true sample is obtained.

	No. of Samples Tested.		Mean Hardness.
January	31		9·7°
February	28		9·3°
March	21		10·3°
April	30		10·5°
May	31		10·0°
June	30		9·9°
July	31		10·0°
August	31		9·9°
September	30		10 1°
October	31		10·1°
November	26		11·1°
December	31		11·1°
	351	Mean for year	10·1°

The average hardness of the unsoftened water was 18·6.

MILK SUPPLIES.

It is hardly necessary to again insist on the importance of clean milk supplies from a public health point of view; and it is satisfactory to note that the milk trade of St. Helens has been carried on with more care than in former years. No case of Infectious Disease was traceable to a milk supply.

The total number of Cowkeepers on the Register in St. Helens during 1898 was 55, while the total amount of accommodation in the shippons belonging to them was for 341 cows. The number of persons registered as purveyors of milk, exclusive of cowkeepers, was 96, and while many of the premises belonging to these are hardly as satisfactory as might be desired, much has been done to place them in a clean and sanitary state. 15 new premises were registered during the year, namely, 7 as Cowkeepers and 8 as Purveyors of Milk. 4 Shippons have been rebuilt on a modern scale during the year.

Before leaving this subject it would be well to insist on the necessity of abundant air space for the cows while in the shippon. The minimum space permitted in St. Helens is 800 cubic feet. Without sufficient air space the risk of Tubercular Disease in the cows is very great, while the danger arising from the ingestion of milk from a tubercular cow is well known. It is to be feared that in the case of much of the milk imported into the town from outlying districts this minimum air space is often not provided.

PROPERTY UNFIT FOR HUMAN HABITATION.

The following is a list of houses which have been closed by order of the Sanitary Authority during 1898 (under Bye-law No. 93 with regard to Buildings).

February	2	House, Parr Moss	Repaired thoroughly and re-opened.
,,	,,	,, ,,	
March	2	2, Back Copperas-street	Ditto
,,	,,	1, 4 Court, Parr-street	Ditto
,,	,,	4, 5 ,, ,, ,,	Closed
,,	,,	5, Johnson's-court, Johnson-st.	Repaired thoroughly and re-opened.
,,	,,	1, Back Blackbrook-road	Ditto
August	3	6, 5 Court, Parr-street	Ditto
October	5	23, Wood-street	Repaired thoroughly and re-opened.
,,	,,	25, ,, ,,	
,,	,,	27, ,, ,,	
,,	,,	29, ,, ,,	

CANAL BOATS ACT.

The following is a copy of the Annual Report of the Inspector under this Act to the Local Government Board:—

In compliance with section 3 of the Canal Boats Act, 1884, I have to present to you my Annual Report as to the execution of the Canal Boats Acts, 1877 and 1884, for the year ending 31st December, 1898.

(1) The Corporation of St. Helens have appointed me to be Inspector under the Canal Boats Acts, in addition to my duties as Borough Surveyor and Chief Inspector of Nuisances. No special remuneration is made for my duties under the Canal Boats Acts.

(2) The number of boats inspected in 1898 was 12, against 5 in 1897.

(3) Of the 12 boats inspected during the year, one was found to contravene section 3 of the Act of 1877—the registered number on the boat not corresponding with the registered number on the certificate. A caution form was sent to the owner, and a reply received stating that the same would have attention. The boat has not been met with in this district since. No other infringements of the Acts occurred during the year.

(4) It was not necessary to take any legal proceedings for infringements, nor was it necessary to take any other steps to secure compliance with the Acts or Regulations.

(5) No case of Infectious Disease was discovered on any Canal Boat during the year, nor was any case reported to the Medical Officer of Health.

(6) No Canal Boats were detained for cleansing or disinfection.

(7) No boats are at present on the Register.

(8) No boat was registered during 1898.

I herewith append a table showing the foregoing facts.

I am, gentlemen,

Your obedient servant,

GEO. J. C. BROOM,

Canal Boats Inspector for the County Borough of St. Helens, Registration Authority.

BLACK SMOKE NUISANCE.

142 chimneys were "timed" during 1898 for periods lasting from a few minutes to over an hour.

It was considered by the Health Committee that if Black Smoke issued from any chimney for a longer period than five minutes at one time, that a nuisance that was preventible was thereby caused.

Of the 142 observations taken, in 35 Black Smoke was sent out for over five minutes—the longest time being 18 minutes.

In each of the 35 cases the works were communicated with and a reply obtained as to the cause, together with an assurance that means were being taken to prevent such from happening again.

SWINE FEVER.

The prevalence of this disease has no very direct bearing on the public health, but from the fact that so many pigstyes exist, even in populous areas in St. Helens, it is not uninteresting to note the number of outbreaks from year to year. Again the destruction of the affected animal in the Refuse Destructor at Parr, and the cleansing of the premises, have been carried out by the Health Committee.

The number of outbreaks reported in each of the seven years is as follows:—

1892	1893	1894	1895	1896	1897	1898
23	48	10	27	33	26	20

OFFENSIVE TRADES.

The following offensive trades are on the register:—

Tripe Boilers	7
Gut Scrapers	1
Manure Manufacturers	2
Soap Boilers	2
Fat Boilers	1
Total	13

A man was summoned and fined for carrying on the business of a tripe-boiler without being registered.

COMMON LODGING HOUSES.

There are 14 Registered Common Lodging Houses in St. Helens, against 17 in the previous year. These contain 73 Registered Sleeping Rooms, having beds for 283 adults and 6 children.

These have been inspected regularly during the day by the Nuisance Inspectors, and at night by the Police.

SLAUGHTER HOUSES.

There were on December 31st 14 Licensed Private Slaughter Houses, together with the Public Abattoir and 1 Knacker's Premises.

The Licenses of 5 of the above Slaughter Houses have been renewed for one year and 2 have been transferred.

The following figures show the number of Cattle Beasts killed in the Corporation Slaughter House and in the rest of the Borough.

	Corporation Slaughter House.	In other Slaughter Houses.
1890	276 ...	... 2429
1891	995 ...	... 2714
1892	959 ...	... 2959
1893	1321* ...	... 2859
1894	1203* ..	... 2847
1895	1226 ...	... 2026
1896	1763 ...	... 1634
1897	1973 ...	... 879
1898	**2465** ...	... **623**

* Owing to want of accommodation, butchers had to kill elsewhere who would have killed here.

The following gives the number of Animals Slaughtered in St. Helens during 1898 and seven preceding years :—

ANIMALS KILLED.	1891	1892	1893	1894	1895	1896	1897	1898
No. of Beasts killed within the Borough in public and private slaughter houses for market purposes ...	3709	3918	4180	4050	3252	3397	2852	**3088**
,, Sheep	4078	4385	5365	4485	3648	3420	4487	**3520**
,, Calves	371	369	1281	588	471	459	427	**443**
,, Pigs	774	872	772	3410	3348	7038	6384	**5957**
Total	9932	9544	11598	12533	11332	15314	14150	**13008**
Beasts killed in the Corporation slaughter house, which are included in the above number	995	959	1321	1203	1226	*6520	6520	**7430**

* Including Sheep, Pigs, &c.

Meat or other Articles seized or given up on account of being Unfit for Human Food, during year ending December 31st, 1898.	
Butchers' Meat	774 score 5 lbs.
Fish (various)	19 cwts
Haddocks	47 boxes
Kippers	80 boxes
Herrings	44 boxes
Viscera	19 sets lungs, etc.
Mackerel	4 boxes
Oranges	44 boxes and 2 hampers

The following prosecutions were instituted for offences during the year:

1—A man for having 44 boxes of rotten oranges in his possession for the purpose of preparation for sale. Fined £2 and costs.

2—Also against the same man for having two hampers of rotten oranges exposed for sale. Fined £1 and costs.

3—Another man for having two hampers of rotten oranges exposed for sale. Fined 10/- and costs.

REPORT OF PUBLIC ANALYST FOR YEAR 1898.

The following Table shows the work done by the Public Analyst during the year 1898.

Name of Sample Analysed.	Number of Samples Analysed.	Number of such Samples which were found to be genuine.	Number of such Samples which were found to be adulterated.	No. of Cases in which a Summons was taken out.
New Milk	72	72	—	—
Vinegar	2	2	—	—
Whiskey	3	3	—	—
Butter	47	46	1	1 Case fined
Cheese	3	3	—	—
Lard	1	1	—	—
Tea	4	4	—	—
Coffee	2	1	1	1 Case Withdrawn
Pepper	2	2	—	—
Bread	2	2	—	—
Peas	1	1	—	—
Totals	139	137	2	2

APPENDED IS A TABLE SHOWING THE NUMBER OF SAMPLES SUBMITTED FOR ANALYSIS SINCE 1890, THE NUMBER OF SUCH SAMPLES WHICH WERE ADULTERATED, AND THE PERCENTAGES OF ADULTERATED SAMPLES DURING THE YEAR.

Articles Purchased.	1890		1891		1892		1893		1894		1895		1896		1897		1898	
	Total Samples	No. Adulterated	Total Samples	No. Adulterated	Total Samples	No. Adulterated	Total Samples	No. Adulterated	Total Samples	No. Adulterated	Total Samples	No. Adulterated	Total Samples	No. Adulterated	Total Samples	No. Adulterated	Total Samples	No. Adulterated
Milk	33	1	30	3	23	2	23	2	25	2	82	8	82	4	69	11	72	—
Separated Milk	—	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—
Whiskey	8	1	11	3	9	1	—	—	12	3	6	1	6	—	6	—	3	—
Butter	14	—	15	3	23	—	6	1	12	2	30	—	30	3	36	—	47	1
Margarine	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—
Bread	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	2	—
Coffee	1	—	1	—	1	—	—	—	—	—	—	—	2	—	2	—	2	1
Cheese	1	—	—	—	—	—	—	—	—	—	1	—	2	—	5	—	3	—
Vinegar	—	—	—	—	—	—	—	—	—	—	—	—	—	—	6	—	2	—
Cocoa	—	—	7	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Lard	3	—	—	—	1	—	—	—	—	—	3	—	6	—	2	—	1	—
Pepper	2	—	—	—	1	—	—	—	—	—	—	—	2	—	4	—	2	—
Beer	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—
Mustard	—	—	—	—	1	—	—	—	—	—	—	—	2	—	—	—	—	—
Paregoric	—	—	—	—	—	—	—	—	—	—	3	—	—	—	—	—	—	—
Tincture of Opium ...	—	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—
Spirits of Nitre	—	—	—	—	—	—	—	—	—	—	2	—	—	—	—	—	—	—
Tea	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2	—	4	—
Peas	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	—
Totals	62	2	64	9	61	3	29	3	49	7	128	9	133	7	133	11	139	2
Percentage of Adulterated Samples—St. Helens	3·2		14·0		4·9		10·3		14·3		7·03		5·26		8·27		1·43	
Percentage of Adulterated Samples—All England	11·2		12·2		12·4		12·9		10·3		9·3		9·2		9·4		—	
Average Amount of Fine in each Case, exclusive of Costs— St. Helens..	s. d. 7 6		s. d. 12 9⅓		s. d. 10 0		s. d. 7 6		s. d. 4 7⅝		s. d. 12 2⅔		£ s. d. 1 5 8⅘		£ s. d. 2 12 5		s. d. 5 0	
Average Amount of Fine in each Case, exclusive of Costs— England and Wales..	£1 9 0		£1 11 3		£1 16 2		£1 17 11		£1 15 7		£1 15 9		£1 10 9		£1 11 0		—	

BAKEHOUSES.

203 Bakehouses were inspected during the year, but only 128 of these were found to be in use. 6 notices were served to limewash and cleanse the premises, and 2 to remove drains from the inside of Bakehouses. Each of these notices were complied with, and no further proceedings were taken.

3 New Bakehouses were erected during the year, and in each of these cases the Health Committee insisted that the bakehouse should not be used as a scullery or washhouse as well as a bakehouse.

WORKSHOPS.

The number of Registered Workshops on December 31st, 1898, was 316. These were visited several times during the year. 3 notices were served to provide efficient ventilation, and 4 notices served to provide extra closet accommodation. These notices were complied with, and no further proceedings were taken.

NUISANCE INSPECTORS' WORK DURING 1898.

Systematic house-to-house inspections have been carried on during the year by the Assistant Nuisance Inspectors, and the following table gives a list of the numbers of cases in which nuisances were found, and for which notices had to be served :—

SANITARY NOTICES.

No. of Sanitary Notices served :—	1891	1892	1893	1894	1895	1896	1897	1898
To Clean Choked Drains	276	357	447	353	303	230	291	**193**
,, Repair or Relay Defective Drains	26	48	57	86	63	66	87	**167**
,, Repair Backyards, Pavement, etc. ..	239	291	252	193	94	69	128	**267**
,, Clean Backyards, Privies, and Passages ..	54	11	46	72	30	18	21	**37**
,, Provide Doors to Privies, Pail Closets, and Ashpits	157	179	59	306	258	170	239	**252**
,, Repair or Re-hang Doors to Pail Closets, Ashpits, and Privies	42	49	92	2	..	..	141	**120**
,, Repair Privies and Ashpits	..	..	..	96	21	8	1	**51**
,, ,, Eaves and Downspouts	11	39	93	126	182	75	134	**101**
,, Provide ,, ,, ...	..	37	14	83	..	42	22	**50**
,, Disconnect Downspouts	29	2	..	..	..	8	19	**60**
,, Repair or Lengthen W.P. to Slopstones ..	101	148	144	133	55	52	49	**53**

SANITARY NOTICES.—Continued.

No. of Sanitary Notices served :—	1891	1892	1893	1894	1895	1896	1897	1898
To Provide W.P. to Slopstones	..	..	..	..	..	..	12	29
,, ,, Slopstones	..	..	28	61	13	4	19	34
,, Repair W.C.'s, Baths, Basins, & Lavatories..	..	..	43	11	18	2	26	13
,, ,, Roofs of Dwelling-houses and Privies	150	115	142	272	258	108	129	131
,, Drain Dwelling-houses	..	..	17	2	25	7	5	15
,, Disconnect and Ventilate Drains	..	..	..	..	..	..	..	84
,, Cleanse and Whitewash Filthy Dwellings ..	..	..	..	18	42	31	27	31
,, Remove Fowls, Pigeons, etc., from Dwellings	..	..	..	..	11	12	6	16
,, ,, Pigs	21	14	39	37	27	28	17	6
,, ,, Rubbish	..	17	16	18	25	18	15	29
,, ,, Manure	..	16	5	29	15	17	24	6
,, Clean Foul Ditches and Cesspools ..	1	2	5	11	29	14	22	25
,, Provide or Repair Ashboxes	..	..	..	194	179	340	32	54
,, Overcrowding	..	37	26	56	153	33	31	24
,, Replaster Walls or Ceilings of Dwellings ..	..	..	..	..	..	..	..	86
,, Remedy Defects in Bakehouses	..	..	..	..	..	..	10	8
,, ,, ,, Cowsheds and Dairies ..	..	..	..	..	..	8	12	3
,, Miscellaneous	323	487	436	237	231	215	164	122
Foul Ashpits to be Reconstructed to W.C.'s ..	..	..	..	..	..	..	218	92
,, ,, No. 2 System and Tub & Pail System	117	192	196	487	39	..	13	1
Totals	1560	2041	2157	2820	2065	1579	1914	2160

REMOVAL OF EXCRETA.

Prior to 1884 all houses, with few exceptions, were on the Privy Midden System. Since 1884 the number of houses put on the Tub and Pail System are detailed in the accompanying table, which has been further brought up to date by the inclusion of the number of Water Closets added during the year :—

	1883	1884	1885	1886	1887	1888	1889	1890	1891	1892	1893	1894	1895	1896	1897	1898	Total	
New Houses Tub and Pail..	..	97	180	352	307	338	349	275	221	268	347	277	175	104	4	..	3294	7468
Converted Privies to Tub and Pail	..	161	526	380	328	415	602	435	117	192	196	487	358	14	21	−16	4174	
Old System	49	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	49	130
New Houses, No. 2 System..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	49	32	81	
New Houses, Water Closets.	..	Total number of Water Closets up to 1896 =												1450	142	355	1947	2067
Converted Privies to Water Closets	..	..	..	..	..	..	..	..	..	..	..	..	..	..	66	17	83	
Tub and Pail to Water Closets	..	..	..	..	..	..	..	..	..	..	..	..	..	..	21	13	37	

The above Table thus shews the number of Water Closets in the whole Borough to be **2067**; Tubs and Pails, **7468**; and No. 2 System, **130**.

To these must be added 2852 Privy Middens which still exist.

WEEKLY RECORD OF METEOROLOGICAL CONDITIONS TAKEN AT VICTORIA PARK.

WEEK ENDING.	Barometer.	Maximum Temp.	Minimum Temp.	Mean Temp	Mean Soil Temp. (4 feet.)	Rainfall (total in.)	WIND. Number of days in each direction.								
							N	NE	E	SE	S	SW	W	NW	Calm
January 1..	29 389	54·1	29·8	43·8	44·6	·43	..	..	..	2	..	5	..	..	..
,, 8..	29·826	53·5	34·1	43·7	44·3	1·51	..	1	..	1	..	2	..	3	..
,, 15..	30·264	52·2	30·1	40·7	44·2	·10	..	..	..	2	..	5	..	..	..
,, 22..	30·217	55·7	32·2	45·3	44·1	·07	..	..	..	1	..	5	1	..	..
,, 29..	30·370	51·4	34·2	44·2	44·3	·02	..	..	..	1	..	6	..	..	..
February 5..	29·838	57·9	30·0	44·4	45·0	·75	2	..	..	..	..	1	..	4	..
,, 12..	29·897	53·0	29·5	41·7	44·5	·38	..	..	..	..	..	4	..	3	..
,, 19..	29·919	54·0	28·1	42·5	44·0	·43	..	1	..	..	..	1	2	3	..
,, 26..	29·571	44·5	22·5	35·3	43·7	·35	3	..	1	1	..	..	1	1	..
March 5..	29·690	45·6	29·0	39·1	43·1	·28	2	..	..	..	..	..	1	4	..
,, 12..	29·994	49·2	27·0	36·8	42·1	·05	1	1	3	1	..	1	..	..	..
,, 19..	29·837	56·8	30·2	44·3	41·8	·29	..	1	..	1	..	3	1	1	..
,, 26..	29·949	49·3	29·5	38·8	42·4	·09	..	4	..	1	..	..	..	2	..
April 2..	29·531	51·0	29·5	39·7	42·6	·05	..	1	2	..	..	1	2	1	..
,, 9..	29·865	66·5	28·8	47·7	42·4	·14	..	..	..	..	..	5	2	..	..
,, 16..	29·640	57·8	35·8	47·6	43·4	1·09	..	..	..	1	..	3	..	3	..
,, 23..	29·856	58·4	35·5	45·9	43·8	·00	..	..	..	6	..	1	..	..	..
,, 30..	29·745	60·0	34·8	48·1	44·9	·30	..	1	1	4	..	1	..	..	..
May 7..	29·690	61·8	39·3	49·6	45·4	·26	..	..	1	..	..	3	1	2	..
,, 14..	29·561	62·4	37·4	48·7	46·2	1·34	..	..	1	..	..	..	3	3	..
,, 21..	29·959	58·8	36·6	48·4	46·9	·59	1	2	2	..	..	1	..	1	..
,, 28..	29·800	66 9	40·8	53·2	47·2	·56	..	1	..	4	..	1	..	1	..
June 4..	29·711	58·2	37·5	49·2	48·1	1·26	..	1	..	..	..	2	1	3	..
,, 11..	29·982	74·4	44·6	57·5	48·7	·15	..	2	..	1	..	3	..	1	..
,, 18..	30·205	72·6	45·9	57·1	50·0	·00	..	1	..	4	..	1	..	1	..
,, 25..	29·738	71·2	48·0	58·1	51·3	1·32	..	..	..	..	..	2	2	3	..
July 2..	29·901	66·5	43 5	56·1	52·4	·67	1	1	..	1	..	..	..	4	..
,, 9..	30·158	64·7	44·3	56·3	53·0	·02	1	..	1	..	..	..	..	5	..
,, 16..	30·140	70·2	47·1	58·8	54·0	·00	..	1	..	..	..	..	..	6	..
,, 23..	29·922	70·6	47·5	60·9	55·1	·31	..	..	1	..	..	2	1	3	..
,, 30..	30·037	68·2	45·5	57·1	55·4	·08	1	..	..	..	..	1	..	5	..
August 6..	29·879	71·9	44·8	60·3	55·9	1·69	..	..	..	..	..	1	..	6	..
,, 13..	29·887	81·8	45·0	60·2	55·9	·61	..	..	..	1	..	4	1	1	..
,, 20..	30·038	81 1	51·0	64·1	56·2	·23	..	1	4	1	..	1	..	..	..
,, 27..	29·958	78·8	44·6	61·4	56·7	·76	..	..	2	2	..	2	..	1	..
September 3..	30·022	67 9	48·8	57·7	56·2	·74	..	..	..	..	..	2	..	5	..
,, 10..	30·052	79·2	52·1	65·4	56·2	·11	..	1	..	4	..	2	..	..	..
,, 17..	30·022	78·8	51·3	62 2	56·8	·07	..	..	..	3	..	2	..	2	..
,, 24..	30·000	79·2	39·6	56·2	56·7	·29	..	..	..	2	..	3	1	1	..
October 1..	29·862	61·2	38·0	50·8	55·5	·65	..	..	2	4	..	..	..	1	..
,, 8..	30·162	67·1	44·2	55·0	54·4	·01	..	..	4	3	..	..	..	..	..
,, 15..	29·787	60·5	35·8	49·1	53·7	·26	..	..	1	4	..	..	..	2	..
,, 22..	29·233	61·1	46·1	52·0	52·9	1·58	..	2	2	2	1	..	..	..	..
,, 29..	29·810	63·4	45·2	53·4	52·8	1·27	..	..	..	..	..	5	2	..	..
November 5..	29·488	61·3	40·7	50·0	15·3	2·27	..	..	..	..	1	3	2	1	..
,, 12..	29·922	55·8	42·4	48·4	51·4	·20	..	..	..	5	..	2	.	..	..
,, 19..	30·114	56·4	31·5	48·8	50·8	·49	..	..	..	..	2	4	..	1	..
,, 26..	29·375	47·2	27·0	38·6	49·9	·47	2	..	1	1	1	1	..	1	..
December 3..	29·475	57·0	28·2	41·6	48·1	·18	2	1	..	1	..	1	2	..	..
,, 10..	29·711	59·8	31·0	48·7	47·7	·64	..	..	..	..	..	5	1	1	..
,, 17..	30·115	56·3	34·5	48·3	47·9	·22	..	..	..	1	..	4	..	2	..
,, 24..	30·020	55·2	30·0	41·0	47·5	·15	1	..	..	2	..	2	..	2	..
,, 31..	29·482	54·3	28·6	42·5	46·6	1·38	..	..	..	1	..	4	1	1	..
TOTALS						27·15	17	24	29	69	5	108	28	91	
Means	29·860	61·7	37·5	49·7	49·0										

RAINFALL

AT ECCLESTON HILL WATERWORKS FOR 30 YEARS.

	1869	1870	1871	1872	1873	1874	1875	1876	1877	1878
January ..	1·78	2·40	·50	*	2·54	2·78	*	1·70	1·70	3·54
February ..	3·12	·60	·84	*	·27	·62	*	3·60	4·50	1·77
March ..	1·47	1·94	·84	4·69	1·46	2·02	·63	2·34	2·43	1·13
April ..	2·31	1·47	2·42	2·94	1·88	1·01	·34	3·25	3·13	2·20
May ..	4·04	1·07	1·45	1·27	1·85	1·44	2·30	·42	2·69	4·34
June ..	1·28	1·47	2·84	5·56	1·69	·96	3·80	2·61	1·07	3·32
July ..	1·18	·81	4·07	7·46	3·53	2·65	3·26	2·74	5·32	1·40
August ..	2·27	1·96	1·53	2·72	3·01	3·24	3·35	3·50	6·16	4·87
September ..	6·49	2·99	2·93	7·03	1·52	2·43	5·65	3·96	3·01	5·06
October ..	3·07	7·31	4·81	5·40	4·24	4·26	5·81	2·90	3·46	3·94
November ..	3·61	2·76	1·08	2·73	2·31	4·50	4·10	4·96	2·56	3·94
December ..	3·13	2·79	·02	3·97	·88	1·51	·78	4·38	2·90	*
Totals ..	33·75	27·59	23·33	43·77	25·18	27·42	30·02	36·36	38·87	35·51

* Gauge broken.

	1879	1880	1881	1882	1883	1884	1885	1886	1887	1888
January ..	*	·49	·08	2·72	2·58	3·51	1·78	3·99	0·98	0·93
February ..	*	·80	4·17	1·73	3·38	2·33	2·35	0·80	0·61	0·61
March ..	1·42	1·37	2·41	2·15	·53	2·49	1·94	1·84	1·33	1·89
April ..	1·14	·66	1·23	4·06	1·09	1·07	1·38	1·12	1·06	1·09
May ..	1·58	1·90	3·35	1·71	·68	0·82	2·14	4·25	2·03	0·66
June ..	3·10	2·15	2·60	6·07	2·90	2·11	3·32	1·68	0·91	2·54
July ..	4·53	5·82	3·47	5·27	3·32	3·30	1·91	3·03	1·17	6·87
August ..	5·15	2·38	6·60	4·41	2·25	2·02	1·98	1·74	1·50	3·31
September ..	3·77	2·90	2·46	3·10	6·41	3·09	4·58	3·47	5·36	1·56
October ..	2·07	3·13	3·14	3·00	5·81	1·49	5·99	4·05	2·37	1·85
November ..	·64	2·03	2·91	3·43	2·60	1·57	3·18	3·04	1·17	4·98
December ..	·61	6·16	4·30	2·12	1·65	3·12	2·18	4·00	2·61	1·89
Totals ..	24·37	29·79	36·72	39·77	33·20	26·92	32·73	33·01	21·10	28·18

* Gauge broken.

	1889	1890	1891	1892	1893	1894	1895	1896	1897	1898
January ..	0·65	3·17	1·01	1·80	0·89	1·87	2·06	1·13	1·11	2·05
February ..	1·53	0·19	0·08	1·54	3·07	4·02	0·04*	1·54	2·35	1·91
March ..	1·27	2·28	0·76	0·73	0·77	2·21	0·89	2·94	2·09	0·73
April ..	1·92	1·31	1·95	1·15	0·39	1·59	1·74	1·48	2·27	1·40
May ..	2·47	1·58	2·13	3·36	1·30	2·48	0·54	0·51	1·33	3·88
June ..	0·35	2·27	3·39	4·08	1·74	2·23	0·82	3·83	3·52	2·87
July ..	2·98	2·43	3·26	3·20	3·32	3·66	3·72	1·92	1·15	0·52
August ..	4·75	3·67	6·50	4·15	2·79	4·77	3·31	3·18	4·88	4·54
September ..	2·25	1·48	2·92	3·80	3·85	0·72	1·17	6·28	4·90	1·28
October ..	2·84	2·09	3·49	6·25	2·18	3·79	5·13	3·18	1·88	4·55
November ..	2·49	6·41	2·92	2·44	1·88	2·56	2·65	1·31	4·61	2·42
December ..	2·39	0·14	3·93	1·96	3·55	3·44	2·88	4·56	3·99	2·84
Totals ..	25·89	27·02	32·34	34·84	25·73	33·34	25·35	31·86	34·08	28·99

* Rain Gauge out of order.

APPENDIX A.

Showing the work done during 1898 in the erection of Buildings and the Paving and Sewering of Streets and Passages.

This information is supplied by

Mr. GEO. J. C. BROOM, M.I.C.E.

Plans Deposited and Approved by the Health Committee.

	1890	1891	1892	1893	1894	1895	1896	1897	1898
For Dwelling-houses	285	238	401	563	310	253	310	329	386
„ Other Buildings	90	66	47	35	45	24	31	26	22
„ Alterations to Existing Buildings	47	49	29	59	73	48	44	40	46
Total	422	353	477	657	438	325	385	395	454

The following Table shows the several Wards of the Borough in which Buildings have been erected during the years mentioned :—

Year.	Eccleston North	Eccleston South	Windle North	Windle South	Sutton, East	Sutton, West	Central	Hardshaw	Parr	Total
1895	22	49	49	4	5	32	—	16	24	202
1896	15	63	57	12	6	36	—	12	43	244
1897	16	28	65	5	15	15	—	7	44	195
1898	40	28	99	14	40	15	—	48	40	324

STREETS.

Sewering, Levelling, Paving, Flagging, and Channelling.

Harrison-street
Newton-street
Dyson-street
Nelson-street
Ada-street

Levelling, Paving, Flagging, and Channelling.

Dorothy-street.

Sewering and Draining.

Nos. 266 to 300, Park-road.

PASSAGES.

Sewering, Levelling, Paving, and Channelling.

Passage rear of Drake-street, Hanover-street, Tamworth-street, and Sydney-street.
,, ,, Rivington-street, Hanover-street, Drake-street, and Sydney-street.
,, ,, Nos. 67 to 83, Ellbess-lane.
,, ,, Ormande-street, Ellbess-lane, Dyson-street, and Borough Sanatorium.
,, ,, Dyson-street, Ellbess-lane, Edgar-street, and Emmett-street.
,, ,, Edgar-street, Ellbess-lane, Bourne-street, and Emmett-street.
,, ,, Bourne-street, Ellbess-lane, Ada-street, and Emmett-street.
,, ,, Nos. 7 to 15, Ellbess-lane.
,, ,, "Rope and Anchor," and 78 to 80, New Cross-street.
,, ,, Nos. 159 to 173, North-road, and Nos. 132 to 150, Chapel-street.
,, between Pitt-street, Graham-street, Earl-street, and Ardwick-street.
,, rear of Nos. 13 to 29, Marsh-street, and behind Park-street.

PUBLIC HIGHWAYS.

Granite Paving.

Church-street.
Westfield-street.
Raven-street, from Salisbury-street to Shaw-street.

TABLE A.

Table of Deaths during the year 1898, in the Urban Sanitary District of St. Helens, Lancashire, Classified according to Diseases, Ages & Localities.

WARDS.	MORTALITY FROM ALL CAUSES AT SUBJOINED AGES.								MORTALITY FROM SUBJOINED CAUSES DISTINGUISHING DEATHS OF CHILDREN UNDER FIVE YEARS OF AGE.														
									2	3	6	7	9	11	12	13	14	16	17	18	19	20	21	22
											FEVERS.													
	At all Ages.	Under 1 year.	1 and under 5.	5 and under 15.	15 and under 25.	25 and under 65.	65 and upwards.		Scarlatina.	Diphtheria	Enteric or Typhoid.	Continued	Puerperal.	Erysipelas.	Measles.	Whooping Cough.	Diarrhœa and Dysentery.	Phthisis.	Bronchitis, Pneumonia, and Pleurisy.	Heart Disease	Influenza.	Injuries.	All Other Diseases.	Total.
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)																
Eccleston, North ..	218	95	55	4	10	37	17	Under 5	..	1	1	1	..	..	7	4	36	..	22	..	..	..	78	150
								5 upwds.	..	..	3	.	1	..	..	..	..	10	10	5	2	1	36	68
Eccleston, South ..	107	36	15	7	3	34	12	Under 5	1	1	..	..	..	1	..	2	5	3	11	..	..	..	27	51
								5 upwds.	..	1	.	..	1	..	..	..	1	6	10	9	..	3	25	56
Central ..	138	48	26	7	12	34	11	Under 5	..	.	..	..	..	..	2	1	17	1	16	..	..	1	36	74
								5 upwds.	..	..	3	..	..	..	..	..	1	9	14	6	..	3	28	64
Windle, North ..	166	63	29	10	6	42	16	Under 5	2	1	..	..	..	..	3	2	12	..	19	..	1	..	52	92
								5 upwds.	..	1	1	..	..	..	..	..	1	10	12	10	4	..	35	74
Windle, South ..	140	51	31	6	7	30	15	Under 5	2	1	1	..	..	..	1	2	14	1	20	..	..	..	40	82
								5 upwds.	..	..	1	..	..	1	..	..	2	10	7	5	2	2	28	58
Hardshaw ..	230	70	45	15	7	76	17	Under 5	1	2	..	..	..	..	3	9	10	..	19	..	..	3	68	115
								5 upwds.	1	..	2	..	..	..	..	..	1	15	32	12	..	7	45	115
Sutton, East ..	147	51	23	4	7	49	13	Under 5	2	3	..	..	..	..	..	7	6	1	12	..	..	1	42	74
								5 upwds.	..	1	..	..	..	1	..	.	1	8	10	9	..	11	32	73
Sutton, West (H) ..	185	63	35	3	10	61	13	Under 5	8	2	..	..	..	..	1	1	15	1	20	..	..	..	50	98
								5 upwds.	1	..	16	..	1	..	..	..		6	16	7	2	9	29	87
Parr ..	199	89	44	9	8	39	10	Under 5	6	2	..	..	..	..	..	5	16	4	21	..		1	68	133
								5 upwds.	..	..	2	..	1	..	..	1	2	7	16	5	2	7	23	66
Rainhill Asylum ..	111	..	..	..	7	92	12	Under 5	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
								5 upwds.	..	..	..	..	..	..	..	..	.	20	19	5	..	1	66	111
Totals ..	1641	566	303	65	77	494	136	Under 5	22	13	2	1	..	1	17	33	131	11	170	..	1	6	461	869
								5 upwds.	2	3	28	..	4	2	..	1	9	101	146	73	12	44	357	772

TABLE B.

Table of Population, and of New Cases of Infectious Sickness, coming to the knowledge of the Medical Officer of Health during the year 1898, in the St. Helens Urban Sanitary District, classified according to Diseases, Ages, and Localities.

WARDS. (a)	POPULATION AT ALL AGES. Census, 1891. (b)	Estimated to middle of 1898. (c)	Aged under 5 or over 5. (e)	NEW CASES OF SICKNESS IN EACH LOCALITY, COMING TO THE KNOWLEDGE OF THE MEDICAL OFFICER OF HEALTH. 1 Smallpox.	2 Scarlatina.	3–4 Diphtheria. Membranous Croup.	6 FEVERS. Enteric or Typhoid.	7 FEVERS. Continued	9 FEVERS. Puerperal	11 Erysipelas.	NUMBER OF SUCH CASES REMOVED FROM THEIR HOMES IN THE SEVERAL LOCALITIES FOR TREATMENT IN ISOLATION HOSPITAL. 1 Smallpox.	2 Scarlatina.	3–4 Diphtheria. Membranous Croup.	6 FEVERS. Enteric or Typhoid.	9 FEVERS. Puerperal	11 Erysipelas.	12 Observation and other cases
Eccleston, North ...	8555	10003	Under 5	..	25	1	4	1	..	2	..	13	..	..	..	..	..
			5 upwds.	..	29	3	13	..	1	15	..	6	..	6	..	..	..
Eccleston, South ...	6797	8549	Under 5	..	10	2	2	..	..	1	..	4	..	..	..	..	..
			5 upwds.	..	27	2	13	..	1	3	..	8	..	10	..	..	..
Central	8219	8690	Under 5	.	8	2	..	..	..	..	..	3	1	..	..	.	..
			5 upwds.	..	9	2	7	..	..	13	..	9	..	3	..	..	..
Windle, North ...	7481	9558	Under 5	..	20	2	1	..	..	1	..	7	..	..	..	..	..
			5 upwds.	..	25	6	12	..	..	11	..	13	.	4	..	..	..
Windle, South ...	8438	9084	Under 5	..	18	..	1	..	..	..	..	1	..	2	..	..	..
			5 upwds.	..	18	2	10	..	..	10	..	12	..	2	..	..	..
Hardshaw	9225	10502	Under 5	..	28	3	.	..	..	1	..	8	..	..	..	..	..
			5 upwds.	..	47	7	16	..	2	44	..	32	..	9	..	..	.
Sutton, East	8250	9475	Under 5	..	11	3	..	..	..	..	..	4	..	..	..	..	..
			5 upwds.	..	26	7	9	..	..	15	..	23	..	5	..	..	..
Sutton, West { Includes Sanatorium.	7418	9186	Under 5	..	6	..	..	..	..	..	..	1	..	..	..	..	..
			5 upwds.	..	11	5	7	..	1	7	..	5	..	5	..	1	..
Parr	8030	9683	Under 5	..	36	3	4	..	.	1	..	15	..	1	..	..	..
			5 upwds.	..	30	10	37	..	2	49	..	16	..	14	1	..	..
Rainhill Asylum ...			Under 5	..	..	..	..	..	..	..	..	..	..	..	..	..	..
			5 upwds.	..	1	..	..	..	..	..	..	..	..	..	..	..	..
TOTAL	72413	84730	Under 5	..	162	16	12	1	..	6	..	56	1	3	..	..	..
			5 upwds.	..	223	44	124	.	7	167	.	124	..	58	1	1	.

The Compulsory Notification of Infectious Diseases Act was adopted in St. Helens on January 7th, 1891.

Patients suffering from Infectious Diseases are received free of charge into the St. Helens Corporation Sanatorium, situated at Peasley Cross (West Sutton Ward) and Old Wint (Small Pox Hospital).

TABLE C.—Deaths Registered in the St. Helens Urban Sani

CAUSE OF DEATH.	WEEKS.														Total for 1st Quarter	WEEKS.								
	*	2	3	4	5	6	7	8	9	10	11	12	13	14		15	16	17	18	19	20	21	22	23
Small Pox	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Measles	..	1	1	..	..	..	..	..	1	..	..	..	..	..	3	..	1	..	..	1	..	..	1	..
Scarlet Fever	..	2	..	..	..	1	1	1	2	3	2	..	..	..	12	..	1	..	1	1	..	..	..	..
Typhus Fever	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Whooping Cough	..	2	..	..	..	..	1	..	..	..	1	..	1	..	5	1	..	1	..	..	..	..	..	1
Diphtheria	..	1	1	1	..	..	1	1	..	..	..	..	..	..	5	1	1	..	..	..	1	..	..	1
Simple or Continued Fever	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Enteric Fever	..	..	..	1	1	..	..	..	1	..	..	1	1	..	5	..	2	..	..	..	..	..	..	..
Influenza	..	..	..	..	..	..	..	1	..	1	1	..	1	3	7	..	..	..	1	..	..	..	..	..
Other Zymotics	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Simple Cholera	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Diarrhœa	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	..	..	..	..	..	..	1	1	..
Dysentery	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Remittent Fever and Ague	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Hydrophobia, Anthrax, &c.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Syphilis, &c.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Erysipelas	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	..	..	..	..	..	..	..	..	..
Pyæmia, &c	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Puerperal Fever	..	..	..	..	..	..	..	..	1	..	..	..	..	1	2	..	..	..	..	..	..	..	..	1
Thrush, &c.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..
Want of Breast Milk	..	..	..	..	..	1	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..
Scurvy	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Chronic Alcoholism	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Rheumatic Fever	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..
Gout	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Ricketts	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Cancer, &c.	..	3	1	..	..	..	..	2	1	..	..	2	1	1	11	1	3	..	2	..	..	..	1	1
Tabes Mesenterica	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	1	..	..
Tubercular Meningitis	..	..	..	..	..	..	1	..	2	..	1	..	..	1	5	..	..	..	..	..	2	..	..	..
Hydrocephalus	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..
Phthisis	..	3	2	1	1	2	3	2	2	3	3	4	3	2	33	3	4	1	1	1	..	1	1	3
Scrophula	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..
Anæmia, Diabetes, &c.	..	..	..	1	..	..	..	..	..	..	..	..	..	..	1	..	1	..	..	..	..	..	..	..
Premature Birth &c.	..	1	2	4	..	2	2	..	1	3	3	..	..	..	18	1	..	4	3	..	..	..	1	..
Old Age	..	1	1	1	1	..	2	2	..	2	..	2	1	..	14	2	..	1	..	..	..	1	1	..
Diseases of Nervous System	..	2	7	4	4	1	5	5	2	4	4	3	7	2	48	2	1	3	1	..	5	5	1	3
Convulsions	..	2	..	1	..	..	1	1	..	2	1	2	2	3	15	2	..	..	2	1	..	2	3	..
Eye, Ear, and Nose	..	..	..	..	..	..	1	..	..	..	..	..	1	..	2	..	..	..	..	..	..	..	..	..
Laryngitis, Croup, &c.	..	..	..	1	1	..	..	..	..	1	2	1	..	..	6	..	2	1	..	1	..	..	..	..
Bronchitis	..	2	7	5	3	1	2	2	3	5	4	4	1	7	47	4	3	..	8	6	..	4	2	2
Pneumonia	..	4	3	2	..	3	4	2	4	4	4	7	3	6	46	5	4	4	5	2	5	4	..	2
Pleurisy	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Heart and Blood Vessels	..	1	..	1	1	..	1	..	1	2	1	1	2	4	15	3	..	..	..	1	1	..	2	1
Dentition	..	..	..	..	..	..	..	..	1	..	..	1	..	..	2	..	..	1	2	..	..	..	..	..
Diseases of Digestive System	..	2	2	1	2	6	1	4	4	2	2	2	1	5	34	2	..	..	1	1	..	2	2	1
Lymphatics and other Glands	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Urinary System	..	..	1	..	..	2	2	1	..	1	..	..	1	1	9	1	1	..	..	..	..	..	..	1
Generative Organs	..	..	..	..	..	..	..	1	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..
Abortion or Childbirth	..	..	..	..	..	..	..	..	..	2	..	..	..	..	2	..	..	..	..	..	..	..	..	..
Diseases of Bones	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Diseases of Skin	..	..	..	1	..	..	..	..	1	..	..	..	..	..	2	..	1	1	..	..	..	..	..	..
Accidental Violence	..	1	1	2	..	3	..	1	..	1	1	..	..	1	11	3	2	..	1	1	1	2	1	..
Homicidal Violence	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Suicidal Violence	..	..	..	..	..	..	..	1	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..
Dropsy	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Debility and Atrophy	..	..	..	2	..	..	1	4	..	1	..	1	2	1	12	1	..	1	2	2	2	2	2	..
Marasmus	..	1	1	3	1	1	..	1	2	1	1	1	1	..	14	..	2	2	1	1	1	1	2	1
Mortification	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..
Tumour	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Abscess	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Hœmorrhage	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Sudden Death, cause unknown	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Other causes, not specified	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Males	..	13	21	21	11	8	18	17	16	21	18	17	17	23	222	16	16	15	20	9	9	13	9	11
Females	..	16	9	11	4	15	12	14	13	17	14	15	12	16	169	16	13	7	14	10	10	14	12	11
Total	..	29	30	32	15	23	30	31	29	38	32	32	29	39	391	32	29	22	34	19	19	27	21	22

* For 1 Day.

District, in weeks, during the year ending December 31st, 1898.

27	Total for 2nd Quarter	WEEKS. 28	29	30	31	32	33	34	35	36	37	38	39	40	Total for 3rd Quarter	WEEKS. 41	42	43	44	45	46	47	48	49	50	51	52	53	Total for 4th Quarter	Total for YEAR.
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
1	11	1	..	..	..	..	..	..	..	..	..	1	..	..	2	..	..	..	..	..	..	..	1	..	..	..	..	..	1	17
1	4	..	..	..	..	..	..	1	..	..	..	..	..	..	1	2	..	1	..	..	2	..	1	..	..	..	..	1	7	24
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
3	9	..	..	..	1	2	1	..	..	2	1	..	..	..	7	..	1	2	..	1	..	3	1	2	..	1	1	1	13	34
1	5	..	..	1	..	1	..	..	..	..	..	1	..	..	3	..	1	..	..	..	..	..	..	1	..	..	1	..	3	16
..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1
..	3	1	..	..	2	..	..	..	2	..	2	2	1	2	12	3	2	1	1	..	..	..	3	..	..	..	..	..	10	30
..	4	..	..	1	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	1	..	..	..	..	..	1	13
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
3	6	..	1	8	7	10	12	10	22	11	7	9	7	17	121	3	3	1	2	1	1	..	1	..	..	..	..	..	12	140
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
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..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1
..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	1	3
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	2	2
..	1	..	..	..	..	1	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	4
..	1	..	..	..	1	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2
..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	1	..	1	..	..	..	..	1	..	..	..	..	..	..	2	3
..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
..	11	2	..	2	1	2	2	..	1	1	1	1	..	1	14	1	1	1	1	..	..	2	1	1	..	..	..	..	8	44
..	5	..	..	1	1	1	..	..	..	1	..	2	3	1	10	..	..	..	1	..	1	..	3	3	2	1	..	1	12	27
1	3	..	..	1	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	1	..	..	..	1	1	..	..	1	4	13
..	2	..	..	..	1	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	1	..	..	1	4
4	31	..	1	3	3	1	1	2	2	3	3	..	2	1	22	4	5	2	2	2	..	..	1	2	1	2	2	3	26	112
..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	1	..	..	..	1	1	5	6
1	3	..	..	1	..	..	..	..	..	1	..	..	..	..	2	..	..	1	..	1	..	..	1	1	..	..	1	..	5	11
1	16	..	1	2	2	2	..	1	2	1	1	1	1	2	16	1	1	1	1	3	2	2	..	4	3	..	1	2	21	71
1	8	1	1	..	2	1	..	1	1	1	1	2	1	1	13	..	..	..	2	1	..	..	1	..	1	..	2	1	8	43
4	31	3	2	2	4	5	1	..	6	1	3	3	5	1	36	2	3	3	2	1	2	..	3	3	3	2	6	4	34	149
..	17	..	2	2	1	1	..	1	2	..	1	2	..	..	12	2	..	..	2	2	..	1	1	1	1	1	..	3	14	58
..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3
..	4	..	..	..	..	..	..	..	..	2	..	..	1	..	3	..	..	1	..	..	..	1	..	..	..	..	..	1	3	16
3	39	2	1	1	..	..	1	1	..	2	..	..	2	1	11	2	1	3	1	1	4	2	7	10	13	9	7	12	72	169
2	37	1	2	2	4	5	3	1	..	1	3	1	1	..	24	1	1	3	2	1	2	2	6	6	4	5	1	4	38	145
..	..	..	..	..	..	..	2	..	..	..	..	..	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2
..	13	1	..	1	2	..	3	1	2	1	1	1	2	1	16	1	3	1	2	5	..	1	1	2	4	4	1	4	29	73
..	4	..	..	..	..	..	..	..	1	..	..	..	1	..	2	..	..	1	..	..	..	1	..	2	..	..	..	..	4	12
2	16	1	5	4	6	2	5	6	4	6	5	8	5	7	64	6	3	2	..	4	2	2	3	1	1	1	..	3	28	142
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
1	5	..	2	..	..	1	1	..	1	..	..	1	..	..	6	..	..	2	1	..	..	..	..	..	..	..	..	1	..	4	24
..	..	..	..	..	..	..	1	..	..	1	..	..	..	..	2	..	..	..	..	..	..	1	..	..	..	..	..	..	1	4
..	..	1	1	..	..	..	..	..	2	..	..	..	..	..	4	..	..	2	..	..	..	..	..	..	..	..	..	1	3	9
..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1
..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	1	5
3	19	1	..	2	1	..	1	..	..	2	1	1	1	1	11	..	2	..	..	..	..	1	1	2	1	1	..	1	9	50
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	1
..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1	..	..	..	..	..	..	..	..	1	1	..	..	1	3	5
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
2	17	..	2	2	3	1	2	1	..	2	2	1	2	1	19	2	2	1	..	2	3	1	3	1	3	2	5	1	26	74
1	14	..	1	2	3	1	2	2	3	1	..	2	2	2	21	1	3	2	..	5	1	2	2	2	2	2	1	..	23	72
..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
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..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1
17	178	8	12	21	31	20	19	17	25	20	18	23	23	22	259	18	18	18	9	12	10	16	25	26	23	13	21	19	228	887
18	171	7	11	17	14	17	19	12	26	20	15	17	14	18	207	13	10	13	11	19	12	8	18	20	18	19	11	29	207	754
35	349	15	23	38	45	37	38	29	51	40	33	40	37	40	466	31	34	31	20	31	22	24	43	46	41	32	32	48	435	1641

Table D.

MORTALITY STATISTICS for Year ending December 31st, 1898, showing Age at Death, and Ward.

DISEASES.	AGES AT DEATH.																		WARDS.									
	0 to 3 ms	3 to 6 ms	6 to 12 ms	1 to 2 yrs	2 to 3 yrs	3 to 4 yrs	4 to 5 yrs	5 to 10 yrs	10 to 15 yrs	15 to 20 yrs	20 to 25 yrs	25 to 35 yrs	35 to 45 yrs	45 to 55 yrs	55 to 65 yrs	65 to 75 yrs	75 to 85 yrs	Upwards of 85 years	Eccleston North	Eccleston South	Central	Windle North	Windle South	Hardshaw	Sutton East	Sutton West	Parr	Whole Borough
Zymotic Diseases																												
(*a*) Miasmatic Diseases																												
Small Pox	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Measles	..	..	..	..	..	2	12	2	..	1	..	..	..	..	..	..	..	..	..	7	..	2	3	1	3	..	1	..	17
Scarlet Fever	..	..	..	..	..	2	5	8	6	1	2	..	..	..	..	..	..	..	..	..	1	..	2	2	2	2	9	6	24
Typhus Fever	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Whooping Cough	..	..	..	..	1	2	7	20	1	1	1	1	..	..	..	..	..	..	..	4	2	1	2	2	9	7	1	6	34
Diphtheria	..	..	..	..	..	..	2	4	2	3	2	2	..	..	..	..	1	..	..	1	2	..	2	1	2	4	2	2	16
Simple, Continued, or Ill-Defined Fever.					..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	1
Enteric Fever	..	..	..	..	..	..	..	1	1	..	..	..	1	3	6	7	7	3	1	..	..	..	4	..	3	1	2	2	..	16	2	30
Influenza	..	..	..	..	..	..	1	..	..	..	..	..	..	1	1	1	..	2	6	..	1	..	2	..	..	5	2	..	..	2	2	13
Other Miasmatic Diseases	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
(*b*) Diarrhœal Diseases																												
Simple Cholera	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Diarrhœa	..	..	..	..	13	36	41	31	6	4	..	1	..	..	1	..	2	..	1	3	1	..	36	6	18	13	16	11	7	15	18	140
Dysentery	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
(*c*) Malarial Diseases																												
Remittent Fever	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Ague	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
(*d*) Zoogenous Diseases																												
Cow Pox and Effects of Vaccination	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Hydrophobia, Glanders, & Splenic Fever.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28

TABLE D.—Continued.

		2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
(*e*) Venereal Diseases																												
Syphilis	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	1
Gonorrhea and Stricture, &c.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
(*f*) Septic Diseases																												
Erysipelas	..	1	..	..	..	..	..	..	..	..	..	..	2	..	..	..	..	..	..	1	..	..	1	..	1	..	..	3
Pyaemia and Septicaemia	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1	..	..	..	..	1	..	..	..	1	..	..	..	2
Puerperal Fever	..	..	..	..	..	..	..	..	..	..	2	1	1	..	..	..	..	..	1	1	..	..	..	..	..	1	1	4
Parasitic Diseases																												
Thrush and other Vegetable Parasites	..	1	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	1	1	..	..	..	2
Worms, Hydatids, & Animal Parasites	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Dietic Diseases																												
Want of Breast Milk	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	..	..	..	..	..	..	..	2
Scurvy	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Chronic Alchoholism	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1	..	..	..	..	..	1	..	..	..	..	..	1	..	2
Delirium Tremens	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	1
Constitutional Diseases																												
Rheumatic Fever & Rheumatism of Heart	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Rheumatism	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	..	..	..	..	..	1	..	..	..	..	1	2
Gout	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Rickets	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Cancer and Malignant Diseases	..	..	..	..	1	.	..	..	..	1	..	1	7	10	16	7	1	..	4	2	5	6	3	4	8	6	6	44
Tabes Mesenterica	..	1	6	8	6	4	1	..	1	..	..	..	..	..	..	..	..	..	9	2	2	2	4	..	2	5	1	27
Tubercular Meningitis	..	1	1	2	4	1	2	2	..	..	..	..	..	..	..	..	..	..	1	..	..	6	1	2	..	1	2	13
Hydrocephalus	..	1	1	1	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	1	..	..	..	2	..	1	..	4
Phthisis	..	1	2	1	3	1	2	1	5	7	13	13	29	18	11	4	1	..	11	9	10	9	11	15	9	27	11	112
Scrofula and other Tubercular Diseases	..	..	..	1	..	..	..	..	2	2	..	1	..	..	..	..	..	..	..	..	2	1	1	..	1	1	..	6
Purpura	..	..	..	..	..	..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	1	1	..	..	..	..	..	2
Anœmia, Chlorosis	..	..	1	..	1	..	..	..	..	..	..	1	..	2	..	1	..	..	1	..	1	1	..	1	..	1	1	6
Diabetes	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1	..	..	..	..	..	..	..	..	..	2	..	..	2
Other Constitutional Diseases	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1

TABLE D.—Continued.

DISEASES.	AGES AT DEATH.																		WARDS.									
	0 to 3 ms	3 to 6 ms	6 to 12 ms	1 to 2 yrs	2 to 3 yrs	3 to 4 yrs	4 to 5 yrs	5 to 10 yrs	10 to 15 yrs	15 to 20 yrs	20 to 25 yrs	25 to 35 yrs	35 to 45 yrs	45 to 55 yrs	55 to 65 yrs	65 to 75 yrs	75 to 85 yrs	Upwards of 85 years.	Eccleston North.	Eccleston South.	Central.	Windle North.	Windle South.	Hardshaw.	Sutton East.	Sutton West.	Parr.	Whole Borough.
Developmental Diseases																												
Premature Birth	67	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	11	7	4	6	3	9	8	8	11	67
Congenital Malformation	2	..	1	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	1	..	..	1	1	1	..	4
Old Age	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	21	17	3	11	6	5	3	4	3	3	8	..	43
Local Diseases																												
(*a*) Nervous Diseases																												
1. Inflammation of Brain or Membranes.	..	2	3	10	1	1	1	6	4	..	..	..	1	1	..	2	..	..	4	1	..	5	2	7	7	2	4	32
2. Apoplexy, Softening of Brain	..	..	..	..	..	..	..	2	..	..	1	1	4	15	19	11	4	1	6	9	4	5	5	10	4	11	4	58
3. Insanity	..	..	..	..	..	..	..	..	..	..	..	11	17	12	3	..	..	..	..	1	..	..	..	..	..	42	..	43
4. Epilepsy	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	1
5. Convulsions	33	8	6	5	2	..	2	..	..	..	..	1	1	..	..	..	..	..	12	2	9	8	5	7	3	5	7	58
6. Laryngismus St.	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1
7. Diseases of Spinal Cord, P. A. and Paraplegia	3	..	..	..	..	..	..	..	..	..	..	..	1	1	1	1	..	..	..	1	..	1	1	1	1	..	2	7
8. Other Diseases of Nervous System	..	..	..	..	..	..	..	..	..	..	1	..	3	1	1	..	1	..	..	..	1	2	..	2	..	2	..	7
(*b*) Diseases of Special Sense																												
Eye, Ear, and Nose	..	..	2	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	1	1	..	1	3
(*c*) Diseases of Respiratory System																												
Laryngitis	..	..	1	3	2	..	..	..	..	..	..	..	..	..	..	..	..	..	3	..	1	..	..	2	..	..	..	6
Croup	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1
Emphysema and Asthma	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	1	..	..	..	..	..	2	..	1	..	..	..	3
Bronchitis	24	14	20	27	5	1	1	1	1	..	..	3	3	17	26	16	10	..	20	11	24	16	16	26	12	20	24	169
Pneumonia	8	6	23	27	7	4	3	6	3	1	2	14	13	15	9	3	1	..	12	10	5	15	11	25	10	34	23	145
Pleurisy	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	..	..	..	..	..	..	..	1	..	1	..	2
Other Respiratory Diseases	2	1	1	..	..	..	..	..	..	..	..	..	..	1	1	..	..	..	..	1	..	2	1	..	..	2	..	6
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28

TABLE D.—Continued.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
(*d*) Diseases of Circulatory System																												
Pericarditis	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1	..	..	..	1	1	..	..	..	..	..	..	..	2
Endocarditis acute	..	..	..	..	..	..	..	..	..	1	..	1	1	..	..	..	..	..	..	..	..	..	..	..	2	1	..	3
Valvular Diseases of Heart	..	..	..	..	..	..	..	..	1	2	2	4	5	6	12	7	1	..	2	4	1	6	3	9	6	7	2	40
Other Diseases of Heart	..	..	..	..	..	..	..	..	1	..	1	1	3	4	7	5	1	..	1	2	5	3	2	2	1	4	3	23
Aneurism	..	..	..	..	..	..	..	..	..	..	..	1	1	1	..	..	..	..	1	1	..	1	..	..	..	..	..	3
Embolism or Thrombosis	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	..	..	..	..	..	..	..	1
Other Diseases of Blood Vessels	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	1	..	..	..	1
(*e*) Diseases of Digestive System																												
Dentition	..	1	6	4	1	..	..	..	..	..	..	..	..	..	..	..	..	..	4	2	1	..	3	..	..	..	2	12
Sore Throat, Quinsey	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1
Diseases of Stomach	6	12	12	9	1	4	1	..	3	2	..	..	3	1	2	..	..	..	6	2	1	10	6	7	3	5	16	56
Enteritis	10	11	7	7	..	1	1	1	..	2	1	..	..	..	..	1	1	..	5	4	4	1	4	5	8	10	2	43
Obstruction Diseases of Intestines	1	..	1	..	..	..	..	..	..	..	..	..	2	3	2	3	1	..	3	..	1	1	2	4	1	1	..	13
Peritonitis	..	1	..	..	..	..	..	..	..	1	..	2	..	1	1	..	..	..	..	1	..	2	..	1	2	..	..	6
Ascites	..	..	..	..	..	..	..	..	1	..	1	..	..	..	..	..	..	..	1	..	..	..	..	1	..	..	..	2
Cirrhoses of Liver	..	..	..	..	..	..	..	..	..	..	..	..	2	3	3	..	1	..	1	..	..	2	1	2	1	1	1	9
Jaundice and other Diseases of Liver	3	..	..	..	..	..	1	..	..	..	..	1	..	1	..	1	..	..	2	..	..	..	2	1	1	..	1	7
Other Diseases of Digestive System	..	..	..	..	..	..	..	1	..	..	2	..	1	..	1	..	..	..	1	..	..	..	1	..	2	1	..	5
(*f*) Diseases of Lymphatic System																												
Lymphatics, &c.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
(*g*) Diseases of other Glands																												
Bronchocele	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Addison's Disease	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
(*h*) Diseases of Urinary System																												
Nephritis	..	..	1	..	..	..	..	..	1	..	..	..	2	3	7	2	..	..	2	1	1	1	..	3	1	6	1	16
Bright's Diseases, Albuminuria	..	..	..	..	..	..	..	..	..	..	..	..	1	2	2	1	..	..	2	..	..	1	1	..	1	1	..	6
Disease of Bladder and Prostate	..	..	..	..	..	..	..	..	..	..	..	1	1	..	..	..	..	..	..	..	..	..	1	..	..	1	..	2
Other Diseases of Urinary System	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..

TABLE D.—Continued.

DISEASES.	AGES AT DEATH.																		WARDS.									
	0 to 3 ms	3 to 6 ms	6 to 12 ms	1 to 2 yrs	2 to 3 yrs	3 to 4 yrs	4 to 5 yrs	5 to 10 yrs	10 to 15 yrs	15 to 20 yrs	20 to 25 yrs	25 to 35 yrs	35 to 45 yrs	45 to 55 yrs	55 to 65 yrs	65 to 75 yrs	75 to 85 yrs	Upwards of 85 years	Eccleston North	Eccleston South	Central	Windle North	Windle South	Hardshaw	Sutton East	Sutton West	Parr	Whole Borough
(*i*) Diseases of Reproduction System																												
Of Male Organs	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1
Of Female Organs	..	..	..	..	..	..	..	1	..	..	..	..	..	1	1	..	..	..	..	..	..	..	..	1	2	..	..	3
Abortion and Miscarriage	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	1
Puerperal Convulsions	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	1
Placenta Praevia	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1
Accidents of Childbirth	..	..	..	..	..	..	..	..	..	..	2	..	4	..	..	..	..	..	1	..	..	..	..	..	1	2	2	6
(*k*) Diseases of Bones and Joints																												
Caries and Necrosis	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Arthritis, Ostitis, Periostitis	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1
Other Diseases of Bones and Joints	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
(*l*) Diseases of Integruments																												
Carbuncle, Phlegmon	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1
Other Diseases of Integumentary System	1	..	1	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	..	..	1	..	..	..	1	4
Deaths from Violence																												
(*a*) Accident or Negligence																												
Fractures and Contusions	..	..	..	..	..	..	..	1	..	2	3	8	6	6	2	1	1	..	1	3	..	..	1	7	6	9	3	30
Gunshot Wounds	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Cuts or Stabs	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Burns or Scalds	..	..	..	..	..	2	..	1	1	..	..	..	..	..	2	..	..	..	..	..	1	..	..	2	3	..	..	6
Poison	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1
Drowning	..	..	..	..	1	..	..	..	..	1	1	2	1	3	1	1	..	..	..	..	3	..	1	..	2	..	5	11
Suffocation (Gassed)	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	1	..	1	..	2
Otherwise	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28

TABLE D.—CONTINUED.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
(*b*) HOMICIDE.																												
Manslaughter	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Murder	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1
(*c*) SUICIDE.																												
Gunshot Wounds	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Cut, Stab	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	1	..	..	..	1
Poison	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Drowning	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	..	..	..	..	..	1	..	..	1	..	..	2
Hanging	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Otherwise	..	..	..	..	..	..	..	..	..	..	1	1	..	..	..	..	..	..	..	..	1	..	..	..	..	1	..	2
Deaths from Ill-Defined and not Specified Causes																												
Dropsy	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Debility-Atrophy	..	..	..	..	57	3	6	1	1	..	..	..	1	..	..	1	1	..	3	..	..	..	12	4	9	5	9	10	6	9	10	74
Marasmus	..	..	..	..	20	17	16	13	3	2	1	..	..	..	..	..	..	..	..	..	..	..	6	3	7	9	5	17	3	9	13	72
Mortification	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1
Tumour	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Abscess	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Hæmorrhage	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Sudden Death (cause not known)	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Other causes not specified	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	1
SUMMARY																												
ZYMOTIC DISEASES	..	..	..	..	15	40	55	73	20	14	5	6	1	4	10	10	13	5	9	3	2	..	56	14	25	28	27	30	21	47	37	285
PARASITIC DO.	..	..	..	..	1	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	1	1	..	..	..	2
DIETIC DO.	..	..	..	..	..	2	..	..	..	..	..	..	1	1	..	1	..	..	..	..	..	..	1	1	2	..	..	..	..	1	..	5
CONSTITUTIONAL DO.	..	..	..	..	4	10	13	14	8	5	3	8	10	17	13	34	25	23	21	10	1	..	26	14	21	27	20	25	22	42	22	219
DEVELOPMENTAL DO.	..	..	..	..	69	..	1	..	..	..	..	..	..	1	..	..	..	..	2	21	17	3	22	13	10	9	7	13	12	17	11	114
LOCAL DO.	..	..	..	..	92	57	86	94	19	11	10	18	17	10	13	43	72	91	102	55	21	1	93	55	59	86	69	123	70	160	97	812
DEATHS FROM VIOLENCE	..	..	..	..	..	2	..	2	..	1	1	3	1	4	5	13	7	9	6	1	1	..	1	3	5	1	2	11	13	11	9	56
ILL-DEFINED OR NOT SPECIFIED	..	..	..	..	77	20	22	14	5	2	2	..	1	..	..	1	1	..	3	..	..	..	19	7	16	15	14	27	9	18	23	148
TOTALS	..	..	..	..	258	131	177	197	52	33	21	35	30	36	41	102	120	128	144	90	42	4	218	107	138	166	140	230	147	296	199	1641

County Borough of St. Helens.

REPORT

ON THE

PREVENTION OF TUBERCULOSIS,

ESPECIALLY AMONGST CHILDREN,

AND ALSO ON SOME MEANS BY WHICH THE

EXCESSIVE INFANTILE MORTALITY

MAY BE CONTROLLED,

BY

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ST. HELENS:

F. HODGSON, PRINTER AND STATIONER, OLD MARKET PLACE.

1899.

Report on the Prevention of Tuberculosis, especially amongst Children, and also on some means by which the excessive Infantile mortality may be controlled.

Medical Officer of Health's Department,
Town Hall,
St. Helens,

March 1st, 1899.

To the Chairman and Members
of the Health Committee.

Gentlemen,

It is an undoubted fact that whilst much has been done during the past thirty years to improve the health conditions of large manufacturing towns, much still remains to be done. There are many directions to which we might turn our attention with a fair hope of attaining to beneficial results, but perhaps the most obvious and at the same time the one in which the most marked improvements may be looked for, is in the direction of limiting the excessive mortality, incident to the first five years of life. At the present time more than 51·6 per cent. (average of last five years) of the total mortality of St. Helens occurs amongst children under 5 years of age, and although the infantile mortality rate and the death-rate of children under 5 years of age compare favourably with those of other large industrial populations, it is still far behind the similar rates for the country as a whole, and still more so as regards those for rural districts.

The causes of death at these ages (0-5 years) consist chiefly of the following:—Bronchitis, prematurity, debility, marasmus, measles, whooping cough, scarlet fever, tuberculosis, and diarrhœa.

The first four—bronchitis, prematurity, debility, and marasmus—I propose to pass by, as being only remotely preventible, and as regards the latter two, at least of indefinite nature, but I would point out that marasmus is probably often, though obscurely, of tubercular origin. The next three diseases—measles, whooping cough, and scarlet fever—are typical zymotic

diseases, in the prevention of which much is being done, and while it is probable that more may yet be accomplished in limiting both their prevalence and fatality, that improvement will proceed mainly on the lines on which we are at present working. We therefore come to Tuberculosis and Diarrhœa as the diseases, by the careful consideration of which, we may hope to attain improvement on lines not yet laid down. I propose to consider these diseases separately, and finally to consider how they may be ameliorated.

TUBERCULOSIS.

It was not until the year 1882 when Koch successfully isolated the tubercle bacillus, and proved its causative relation to the group of diseases known as tubercular diseases, that Tuberculosis came definitely to be regarded as an infectious disease, capable of being transmitted from man to man and from animals to man; and it is only within the past three or four years that this belief has definitely taken root and forced itself on the attention of the Health Authorities of the country. Since Koch's discovery, a growing mass of evidence has been adduced of its infective origin, and its methods of spreading are now fairly well recognised. The chief of these are:—

(1) Infection from person to person, the contagion being conveyed principally by means of the dried sputum of phthisical subjects.

(2) By means of meat.

(3) By means of cows milk. I shall try to show later, that this is the method by which Tuberculosis is chiefly conveyed to young children.

To these exciting causes may be added the predisposing causes of overcrowding, badly lit and badly ventilated dwellings, houses on damp sites, dusty occupations, intemperance, and in children—improper feeding.

Before proceeding further, it would be well to ascertain from statistics the extent of the evil to be contended with, and for this purpose I have abstracted certain tables supplied by Dr. Tatham to the Royal Commission on Tuberculosis in 1896, and I have compiled, as far as lay in my power, similar statistics obtained from the death returns for St. Helens during the last 28 years. Whilst admitting that it is not possible to make an exact comparison between these rates for the several periods, owing to improved diagnosis, change of nomenclature, &c., Dr. Tatham is of opinion that these statistics are of distinct value.

Dr. Tatham compares the death rates per million from "all form of tuberculosis," "phthisis," and "tabes mesenterica" at different age periods

for the decennia 1851-60, 1861-70, 1871-80, and the quinquennia 1881-85, 1886-90, 1891-95. I have prepared similar tables for St. Helens for the decennium 1871-80; the quinquennia 1881-85, 1886-90, 1891-95, and the three yearly period 1896-98.

With regard to these local tables, I would point out that owing to the small numbers on which they are based, errors are liable to creep in, and that they cannot be taken as being so accurate an index as the tables for England and Wales; still they show more or less the course of Tubercular disease in St. Helens during the past 28 years.

Taking the tables dealing with "all forms of tuberculosis" in England and Wales, it is at once apparent that a considerable and continuous diminution in the death rate at all ages (39·1 per cent.) has occurred when comparing 1851-60 with 1891-95, and that this diminution holds good when the different age periods are considered, with the difference however that at some ages, and especially the adult ages, when human life is of greatest value to the community, the diminution is far more marked than in childhood. The St. Helens statistics prove somewhat the same thing, showing however a smaller decrease of disease at the earlier ages, which is especially marked under 1 year.

When we come to consider the tables dealing with deaths from "Phthisis" in England and Wales at the same age periods, and for the same periods of years, we are at once struck by an even greater percentage reduction (45·4) than that seen from "all form of Tuberculosis;" indeed it seems probable that most of the reduction under the latter head is due to the reduction in the "Phthisis" death rate.

In this table the reduction reaches its maximum at the earliest age, and a steady and even rate of reduction is maintained to the thirty-fifth year. In this connection I would point out that the great reduction at the earlier ages is perhaps somewhat fallacious by reason of improved diagnosis and certification, whilst the smaller reduction at the later ages (45 and upwards) is more favourable than would at first sight appear from the fact that it is probable that many deaths which formerly occurred at the earlier ages are now postponed to the later, thus producing a real and marked saving or prolongation of life.

The St. Helens table on the other hand is somewhat of a contrast to that of England and Wales. Again we see a marked reduction at all ages, which reduction is also true for each age period after the fourth year. In addition, however, we find that at the age, 0-4 years, there has been no

decrease—but on the contrary, a marked increase. This statement also holds good for the total rate, under 5 years. What the precise reason for this increase is, it is difficult to say, but I am inclined to the idea that "phthisis" at these early ages often represents not "pulmonary phthisis" but "abdominal phthisis," and that many deaths included in this table should more properly be classed in the table dealing with Tabes Mesenterica.

So far, the available statistical information has given some grounds for satisfaction, but when we examine the tables dealing with "Tabes Mesenterica" we must deplore that, with this signal saving of life from tubercular disease, there has been no diminution, but rather an increase in the form of this disease, particularly incident to the years of childhood.

Tabes Mesenterica is a somewhat indefinite disease of tubercular origin, mainly affecting the abdominal organs of children, the tubercular infection being probably imbibed with food (milk). At all ages, the reduction in the mortality from "Tabes Mesenterica" in England and Wales is only 8·5 per cent; whilst under one year, there has been an actual increase of 27·7 per cent., and under 5 years a reduction of only 3 per cent.

The St. Helens table also shows the above fact, though in a somewhat more marked degree. At all ages, there is an actual increase of 33·7 per cent., and the total rate under 5 years shows an increase of 42 per cent., while the rate under 1 year, gives the startling figure of 134·4 per cent. of increase.

Taken in conjunction with what I have already said in dealing with the Phthisis rates, there can be little doubt I think, that at the present time, we have a real and alarming increase of Tubercular disease in children aged 0-5 years, such increase being specially marked in the 0-1 age period. Sir Richard Thorne, in his Harben Lectures on the prevention of Tuberculosis, summarises the information obtained from these statistics as follows:—

(1) There has taken place a remarkable reduction in the rate of deaths from "all forms of Tubercular disease," this reduction being most marked during the age period 10 to 35 years.

(2) There has been a still more remarkable reduction in the rate of deaths from "Phthisis," this reduction being greatest at the several age periods ranging from infancy up to 35 years.

(3) Notwithstanding these facts, there has on the contrary been a large increase in the rate of deaths from "Tabes Mesenterica" under 1 year of age.

Considering the influences which have led to the reductions in "all forms of Tuberculosis," Sir Richard Thorne is of opinion that they may be practically regarded as those which have helped to reduce the Phthisis death rate, and prominent among them he places the provision of greater air space, free acess of sunlight, and improved ventilation both in dwellings and places of labour; while next in importance he places provisions against soil dampness.

On the other hand, however, Abdominal Tuberculosis has increased, and that notably in the earliest years. Is not this fact to be explained on the ground that artificial feeding has been resorted to more and more during later years, cows milk being substituted for the breast, while at the same time few, if any, additional precautions have been taken to ensure its purity? What are the means at our disposal for preventing the spread of Tuberculosis?

In this connection it would be well to distinguish between Pulmonary Phthisis, in which the contagion is aerially conveyed, and Abdominal Tuberculosis, in which the contagion is probably taken in with the food. The measures for combating Pulmonary Phthisis comprise the following:— Notification, Disinfection after death, Education, Insanitary Conditions, Examination of Sputum, and Provision of Sanatoria.

1.—Compulsory Notification. I am far from agreeing with the general outcry at the present day, that Tuberculosis, or at any rate, Phthisis, should be added to the list of notifiable diseases. Phthisis differs materially in its course from the group of diseases at present included under the Notification Act. The latter are well defined, sudden in their onset, running a typical and rapid course, and ending, in from four weeks to three months, in complete recovery. In addition, the infective stage is of a limited and short duration, and is usually accompanied by a physical condition rendering the subjects unable to take part in their ordinary avocations, and rendering necessary their confinement to one room, if not to bed. Phthisis, on the other hand, is a chronic disease, often lasting for years, infective throughout, such infectivity however being limited to the sputum, and moreover the subjects of the disease are not only able, but often obliged to work for their living. While believing that to properly grapple with a disease it is necessary in

the first place to have accurate knowledge as to its distribution, I do not think that public opinion is at present ripe for the compulsory notification of Phthisis.

On the other hand, a system of Voluntary Notification, the Health Department paying a fee to the medical attendant for those cases in which, in his opinion, the interference of the Health Department would be advantageous, might be of great value, and would, I think, meet with little opposition from the general public.

2.—Disinfection after Death. In September last, after attending the Dublin Conference, I advised your Committee that it would probably be advantageous to enquire into all Tubercular deaths, and, when necessary, to disinfect the premises. You at once authorized me to make arrangements for this purpose. As soon as a death from Tuberculosis is reported to the Registrar, he forwards to me particulars thereof, and the case is at once investigated, and the house disinfected. It is far too early as yet, to draw any conclusions from these investigations, but I am more than ever convinced that this step will be of great advantage in the future.

3.—Education. It is, I think, by means of educating the public that the greatest progress will be made in combating the excessive mortality from "Phthisis," and I submit for your approval, certain simple rules which might be distributed as a leaflet throughout the borough.—*See Apendix B.*

4.—Insanitary Conditions. Under your bye-laws, it is now impossible to build dwellings without an adequate amount of ventilation and light, and the Health Department is, and has been for some years, gradually exterminating the confined and crowded areas of the borough. I have no further suggestions to make under this head.

5.—Examination of Sputum. By means of the bacteriological examination of sputum from suspected cases of Phthisis, an early diagnosis of the disease might often be made, and measures promptly be taken to prevent the contagion being spread. At the present time I only occasionally examine sputum for the medical men of the town, but I hope greater advantage will be taken of this in the future. I am of opinion, however, that should the examination result in the discovery of Tubercle Bacilli, such examination should be taken as constituting a notification of the disease.

6.—Provision of Sanatoria. During the last two or three years the open air treatment of Phthisis has attracted a large amount of attention, and there can now be little doubt that great and lasting benefits are obtained by this means. As a result, movements have been set on foot to erect Sanatoria in suitable places. More than one local authority has, I believe, decided to take steps in this direction, and doubtless more will do so in the future.

For the present, however, I think it would be premature for the Corporation to contemplate such a measure.

ABDOMINAL TUBERCULOSIS.

The measures for combating this form of the disease may be subdivided into two—(1) Where meat is the vehicle of infection. (2) Where milk contains the contagion.

1.—Meat. With regard to infection by meat, I have also little further to recommend. I cannot but think that the danger to be feared from eating Tubercular meat has been somewhat exaggerated, and this opinion seems borne out by statistics. During the meat eating ages, it is not Abdominal Tuberculosis which is either the most prevalent or the most fatal, but Pulmonary Phthisis; still, experiments have proved that there is risk sometimes amounting to a positive danger. The administrative measures to be adopted to remove this risk as far as practicable consist in careful and systematic inspection of all carcases before being used for food. To do this efficiently, necessitates the provision of public slaughter-houses and the gradual closing of private ones. This you have already done.

With regard to the amount of Tuberculosis which would render a beast unfit for human food, much diversity of opinion exists; but the Royal Commission on Tuberculosis of 1896, has issued a series of recommendations on this subject, and it is on these lines that carcases are condemned in St. Helens, and have been, I believe, for the last 10 years.

I think that it would perhaps be well to place on record the recommendations before mentioned.

(*a*) When there is Miliary Tuberculosis of both lungs. (*b*) When Tuberculous Lesions are present on the pleura and peritoneum.	The entire carcass and all organs may be seized.

(*c*) When Tuberculous Lesions are present in the muscular system, or in the lymphatic glands, embedded in or between the muscles. (*d*) When Tuberculous Lesions exist in any part of an emaciated carcass.	The entire carcass and all organs may be seized.
(*a*) When the Lesions are confined to the lungs and the thoracic lymphatic glands. (*b*) When the Lesions are confined to the liver. (*c*) When the Lesions are confined to the pharyngeal lymphatic glands. (*d*) When the Lesions are confined to any combination of the foregoing, but are collectively small in extent.	The carcass if otherwise healthy, shall not be condemned, but every part of it containing Tuberculous Lesions shall be seized.

"In view of the greater tendency to generalisation of Tuberculosis in the pig, we consider that the presence of Tubercular deposits in any degree should involve seizure of the whole carcass and of the organs."

2.—Milk. Lastly we come to the infection due to the ingestion of Tubercular milk, and I believe that this method of contagion is of the greatest danger to the community. Not only is milk a common form of nourishment for infants, but "Tabes Mesenterica," or Consumption of the Bowels, that form of Tubercular disease associated with the ingestion of Tubercular material, is almost confined to the first 5 years of life.

It is well known that infant life is far more sensitive to evil influences than adult life. Sir Richard Thorne shows that during the past 45 years sanitary reforms have reduced the number of deaths from Tuberculosis at all ages to the extent of 48,000 lives annually in England and Wales, and he is of opinion that infants have probably benefited more than any other class; still, in spite of this, there has been a large increase in the rate of death from that form of Tuberculosis, which is mainly induced by the reception of the infection by the agency of food.

The measures to be adopted to limit this form of disease comprise Regulations as to Cowsheds, the Tuberculin Test, and Sterilization of Milk.

1.—Regulations as to Cowsheds. You issued in 1894, Regulations as to Cowsheds and Dairies, under the Contagious Diseases Animals Act, and much has been done to bring about a better state of

affairs in the cowsheds of the borough. During the past year I have twice visited, personally, all the cowsheds within the borough, and I am pleased to state that at my second visit, generally speaking, I found an improved state of affairs. In two cases new shippons have replaced old and insanitary ones, while a third is shortly to be erected. Less overcrowding was also found, and in three or four cases a proper and sufficient water supply has been installed. I trust that still more may be done in this direction. Unfortunately, a large amount of milk is imported into the borough from shippons situate outside, and owing to the want of uniformity of local administration these shippons are often in an insanitary condition. It is difficult to know how this state of affairs may be met, but pending an alteration in the law, some slight control might be obtained by the issue of voluntary certificates by the Health Department, similar to those lately issued by the County Borough of Sunderland. These certificates are only issued to those farmers who conduct their business according to the regulations, and in addition have their beasts tested by the Tuberculin test, afterwards eliminating those that react. *See Appendix C.*

2.—Tuberculin Test. The systematic inspection of cowsheds, coupled with approved sanitary conditions, will do but a part of what is required, if those cowsheds contain Tubercular Cows. I hold that it is of the first importance to get rid of all beasts affected with Tuberculosis. A ready, and I believe, reliable test has been found for distinguishing Tubercular beasts from Non-Tubercular. I refer to Koch's Tuberculin Test. Having once weeded out the cows that react to this test, it would be necessary to repeat the test once a year, in order to ascertain if Tuberculosis has been re-introduced. In your last act, two clauses were inserted with a view of dealing with Tubercular Milk. These clauses would at once become operative if the Tuberculin Test became general. I think the Health Committee should encourage the employment of this test as much as they can.

3.—The Sterilization of Milk. In the ideal state of affairs, where milk would be guaranteed as obtained from Tubercle free and healthy cows, reared in spotless shippons, and where moreover its subsequent handling both by the milker and purveyor would be such as to prevent the introduction of germs, we should require nothing more. Such, however, is not the case, and indeed is never likely to be. While then it must be our aim to approximate as near as may be to this ideal state, it is of paramount importance that we should also safeguard our milk supplies by means of Sterilization.

I would point out that the Sterilization of milk has a more far reaching importance even than the prevention of Tuberculosis. By its means alone can a milk be guaranteed germ free.

It is a well established fact that milk forms a particularly fine breeding ground for all sorts of germs, and particularly is this the case as regards the germs of Typhoid Fever, Scarlet Fever, and Diarrhœa. A year never passes but some place is visited with an outbreak of either typhoid or scarlet fevers directly traceable to some milk-supply. As an instance one may mention an outbreak of Typhoid at Clifton about a year and a half ago which was traced to such a source. In this instance nearly 200 cases occurred, many of which ended fatally. There is also the historic epidemic of Scarlet Fever known as the "Hendon Outbreak" in which that disease was directly traced to a particular dairy. As far as I am aware no such outbreak has occurred in St. Helens, but the possibility of its occurrence must not be lost sight of. As a matter of fact I feel convinced that much of the Diarrhœa occurring during the summer months among children may be traced to this cause. The Sterilisation of milk would thus at once put a check on many diseases. Many foreign countries are ahead of England in this respect and first among these stands Denmark. It seems almost unaccountable that on the mere question of taste Sterilization is not more largely adopted in England. I have had some correspondence with the Danish Agent in England on this point, and I am able through his courtesy to give you some information as to the procedure employed at Copenhagen. In that city all the milk sold has been sterilised in bulk since the year 1895, by a process known as "the milk-supply Pasteur." The Sterilization is carried out by means of raising the milk to a high temperature, without exposing it to the air, and subsequently bottling it in sealed sterilized bottles. Mr. Faber describes the procedure as follows:—

"The apparatus used consists of a system of horizontal tubes somewhat similar to a tubular boiler or a condenser in a steam ship. The milk passes successively through all these tubes, running in zig-zag through the whole system. The tubes are all encased in wider tubes and in the space between the milk tubes and the surrounding tubes is water at a temperature which can be regulated. Passing through the first tubes, the milk is gradually heated until it reaches 85° to 90° C. On its further course it is very quickly cooled down, and thereby the cooked or scalded taste is absolutely avoided. On account of the friction or resistance in forcing the milk through the system of pipes, which is done by means of a pump, considerable pressure is produced, and probably this has a good deal to do with

avoiding the boiled taste and other changes in the milk, by preventing the air from escaping out of the milk. The single tubes can be easily separated, cleaned, and put in place again. During the whole time of its treatment, heating and cooling, the milk is never exposed to the air. When it comes out of the Pasteurising Apparatus, it is bottled in glass bottles, which have previously been cleaned and sterilized under steam pressure. When filled they are sealed in some way, for the guarantee of the producers. The milk will keep good for several days. It has been found possible to retail milk, treated in this way, at the same price as ordinary milk. This is the only milk-supply I know of where all milk is Pasteurised. Already several towns are adopting this system. There are many details in the working which require closer study, so that it would be necessary to send someone to learn the process, before attempting to work it, and the milk-supply Pasteur is open to inspection by any-one interested."

Such in brief is the system adopted in Copenhagen. Other forms of apparatus have been invented for the Sterilization of milk, and the subject requires further investigation before an opinion can be given as to their relative merits. It appears to me, however, that the subject is worthy of the fullest investigation. Further reference is made to the necessity for Sterilization in the portion of this report devoted to Diarrhœa.

DIARRHŒA.

I now pass to the mortality from Diarrhœa, which disease is particularly incident to children under 5 years. This disease becomes epidemic in St. Helens practically every summer, and carries off a relatively large number of young children, varying annually from ·48 to 2·20 per 1,000 during the past 10 years. It is a disease of undoubtedly microbial origin, the growth of the organism being fostered by filth and an organically polluted soil, which latter fact is proved by the relationship which exists between the earth temperature at four feet and the rise of diarrhœa mortality. The method of infection, however, is probably by means of the food, errors in diet preparing the way for the reception of the microbe. In a report which I presented to you in September last I demonstrated the heavy incidence of the disease on the first year of life, which incidence was specially marked on bottle-fed children. In that report I laid stress on the improper feeding of infants as a causative agent, and you authorised me to obtain a list of the births occurring in St. Helens and to distribute to the mothers of these infants leaflets on the feeding of their children. Since September I have further investigated the subject, and

have had some correspondence with Dr. Dufour, of Fécamp, in Normandy, on a method inaugurated by him in that town, by means of which he has most materially diminished the infantile mortality, especially that from diarrhœa.

With a view to showing the course of the Diarrhœa death rate in St. Helens I have prepared a table, similar to those already shown to you, in regard to Tuberculosis. The same periods of years are compared for the same age period.

DIARRHŒA.

PERIODS.	PER MILLION LIVING.						
	Under 1 year.	1—2 years.	2—3 years.	3—4 years.	4—5 years.	Total under 5 years.	All Ages.
1871—1880 (10 yrs.)	30975	14984	1813	558	453	10184	1799
1881—1885 (5 „)	26175	8972	1148	322	224	7802	1399
1886—1890 (5 „)	25695	9960	684	403	423	7979	1369
1891—1895 (5 „)	24950	8747	1415	—	288	7666	1251
1896—1898 (3 „)	26391	8553	1605	1523	145	8257	1351
Increase or Decrease per cent. between 1871—1880 & 1896—1898 — Inc.	—	—	—	172·9%	—	—	—
Dec.	14·7%	42·9%	11·4%	—	67·9%	18·9%	24·9%

In compiling this table, only deaths certified as Diarrhœa are included; had other diseases (probably related to Diarrhœa) among children, affecting the digestive tract been included, the numbers would have been far greater, though the relative proportions at the different periods would have remained similar.

In analysing this table, one is at once struck with the heavy mortality rate during the first year, followed by a still large, though greatly reduced rate at the 1—2 years age period, and a rapidly diminishing rate during the next three years. Comparing the different periods of years, one finds that during the whole 28 years, little has been accomplished in reducing this mortality, indeed, leaving out the first decennium, one may

say that the Diarrhœa death rate has remained stationary. Even including that period the reduction is little to boast of. At all ages a fair reduction of 24·9 per cent. has been effected, this reduction drops to 18·9 at all ages under five, and falls still further to 14 per cent. under one year. Considering the great sanitary reforms which you have carried out, I cannot regard this state of affairs as at all satisfactory.

As I above stated, I am of opinion that Diarrhœa is caused by the pollution of the child's food with a microbe, and it seems almost incontestible that if we could ensure that this food was sterile we should at once strike at the root of the evil. The Sterilization of milk is therefore again one of the chief means by which this may be done. But in this instance something more than Sterilization is needed. It is authoritatively stated that a germ falling on a healthy surface is much less potent for evil than if it falls on a diseased one. The feeding of infants on improper diet, *i.e.*, indigestible foods, thus contributes to the disease by rendering the digestive tract unhealthy, and in an unfavourable condition to combat the disease, and here I would add that proper feeding would not only reduce the power of the Diarrhœa Organisms but would also tend to diminish the power of other Organisms, *i.e.*, Tubercle, and would likewise diminsh the deaths from diseases of the digestive tract.

Now children reared by the breast exhibit a greater vitality than bottle-fed children, and while not desiring in the least to do anything to diminish the number of the former, something should be done to reduce the mortality of the latter, and for this purpose, not only do we require sterilized milk, but we require to approximate it in composition to maternal milk, *i.e.*, humanise it.

It is this humanisation and sterilization that Dr. Dufour is attempting with apparent success at Fécamp.

Fécamp, in common with the Department in which it is situated, Seine Inférieure, has an extremely high infantile mortality—about 300 per 1000 births. To mitigate this, Dr. Dufour has formed a society called the Goutte de Lait, the objects of which are (1) to give mothers advice and to encourage them to rear their children by the breast, and (2) where this is impossible or only partly possible, to supply them with sterilized humanised milk in sterilized bottles.

The very poor are supplied with milk at 1d. per bottle, artisans obtain it at 3d. per bottle, while the well-to-do pay as much as 6d. or 7d. per bottle. The milk is the same in each instance, and as many bottles as are necessary for the child are supplied.

The milk, after being tested as to its quality and freedom from micro-organisms, is diluted by adding a third part of water. Then from 15 to 20 grammes of cream, 35 grammes of lactose, and one gramme of salt per litre are added. Thus prepared it is poured into feeding bottles, which are closed, and, together with the nipples (fresh nipples being used for each infant), are placed in a Hignett's steriliser. In this apparatus it is heated to 102° for three quarters of an hour. The bottles are then taken out and placed in baskets when they are ready for distribution.

The mothers. on applying for the milk each day, bring their babies, who are examined and weighed, and a record of their progress kept from day to day.

The results obtained by this means are most satisfactory, the children so fed show no signs of rickets, tuberculosis, etc., and mortality from Diarrhœa among them is greatly reduced. During the four years the Society has been at work, the mortality from all causes in children under one year in Fécamp was 243 per 1000 births, while in children fed on the sterilised milk it was only 142 per 1000. While only taking the deaths from Diarrhœa, we find they are 115 and 32 per 1000 births respectfully.

In August of last year, the infantile mortality at some of the towns in Normandy was as follows:—

Rouen	...	91%,	of	which	Diarrhœa	caused 76·6%
Bolbec	...	78%	„	„	„	66·0%
Havre	...	68%	„	„	„	51·2%
Fécamp	...	30·2%	„	„	„	16·0%

In children fed by the Society, the mortality was only 7·6%, of which 2·8% was due to Diarrhœa. So impressed have various towns in France been with the success of the Goutte De Lait at Fécamp that they are starting similar Societies. Among them may be mentioned, Bourg, Versailles, Elbeuf, Nantes, Saint Mazaire, Toulon, Marseilles, and Havre. These statistics speak for themselves, and the work already done calls, I think, for at least further investigation.

I am, Gentlemen,

Your obedient Servant,

F. DREW HARRIS.

APPENDIX A.

INFANTILE MORTALITY RATE

Per 1000 Births, in England and Wales, 33 Great Towns, 67 Large Towns (other than the 33), Rural Districts, and St. Helens for each of the past 5 years.

Years.	1894.	1895.	1896.	1897.	1898.	Average for 5 years.
England and Wales ...	137	161	148	156	160	152·5
33 Great Towns ...	152	182	168	176	178	171·0
67 Large Towns (other than the 33) ...	115	141	161	169	173	152·0
Rural Districts ...	98	114	104	110	116	108·0
St. Helens ...	**161**	**181**	**177**	**181**	**172**	**174·5**

MORTALITY RATE
PER 1000 LIVING UNDER 5 YEARS

in England and Wales and St. Helens for each of the past 5 years.

Years.	1894.	1895.	1896.	1897.	1898.	Average.
England and Wales ...	50·7	59·0	54·9	...	...	for 3 years, 54·8
St. Helens	59·2	71.7	69·8	76·2	68·2	for 5 years, 69·0

ENGLAND AND WALES.

MORTALITY FROM ALL FORMS OF TUBERCULAR DISEASE IN SEVERAL PERIODS, 1851—1895.

Period.	Per Million Living.											
	Under 5 years.	5—10 years.	10—15 years.	15—20 years.	20—25 years.	25—35 years.	35—45 years.	45—55 years.	55—65 years.	65—75 years.	75 and upw'ds.	All Ages.
1851—1860	5764	1218	1359	3200	4361	4463	4208	3589	2986	2154	929	3483
1861—1870	5445	979	1094	2833	4053	4333	4102	3428	2767	1724	617	3240
1871—1880	5209	861	920	2205	3221	3693	3807	3197	2529	1572	537	2863
1881—1885	4547	874	865	1923	2695	3273	3413	2937	2290	1441	536	2540
1885—1890	4441	819	798	1652	2327	2829	3099	2757	2244	1450	605	2322
1891—1895	4155	762	725	1510	2081	2503	2912	2563	2057	1252	514	2122
Reduction per cent. between 1851—1860 and 1891—1895 ...	27·9%	37·4%	46·7%	52·8%	52·3%	43·9%	30·8%	28·6%	31·1%	41·9%	44·7%	39·1%

ST. HELENS.

MORTALITY FROM ALL FORMS OF TUBERCULAR DISEASE IN SEVERAL PERIODS, 1871—1898.

Period.	Per Million Living.													
	Under 1 year	1—2 years.	2—3 years.	3—4 years.	4—5 years.	Total under 5 years.	5—15 years.	15—25 years.	25—35 years.	35—45 years.	45—55 years.	55—65 years.	65 and upwards	All Ages.
1871—1880 ...	11123	10876	4534	1550	1424	6047	846	1909	3301	3977	3668	2653	1542	2913
1881—1885 ...	11633	11580	3864	2254	1348	6312	822	2030	2679	2891	3370	2965	1171	2725
1886—1890 ...	21103	12011	4007	1312	847	8292	703	1611	2738	3100	2680	2337	946	2846
1891—1895 ...	11133	6008	1680	1556	961	4504	981	1579	2581	3211	2627	2127	608	2292
1896—1898 ...	10986	6950	2542	1246	727	4730	585	1423	2495	2431	2694	1234	368	2070
Increase or Decrease per cent. between 1871-80 & 1896-98. Inc.	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Dec.	1·2%	36·09%	43·9%	19·6%	48.9%	21·7%	30·8%	21·7%	24·4%	38·8%	26·5%	53·4%	76·1%	28.9%

ENGLAND AND WALES.

MORTALITY FROM PHTHISIS IN SEVERAL PERIODS, 1851—1895.

Periods.	Per Million Living.								
	Under 5 years.	5—10 years.	10—15 years.	15—20 years.	20—25 years.	25—30 years.	35—45 years.	45—55 years.	All Ages.
1851—1860	1305	572	1025	2961	4181	4317	4091	3466	2679
1861—1870	968	454	825	2651	3928	4243	4026	3340	2475
1871—1880	767	358	664	2036	3117	3619	3745	3132	2116
1881—1885	569	312	560	1695	2535	3154	3312	2849	1830
1886—1890	502	271	488	1420	2144	2691	2985	2656	1635
1891—1895	444	228	410	1253	1875	2342	2771	2440	1463
Reduction per cent. between 1851—1860 & 1891—1895	66·0%	60·1%	60·0%	57·7%	55·2%	45·7%	32·3%	29·6%	45·4%

ST. HELENS.

MORTALITY FROM PHTHISIS IN SEVERAL PERIODS, 1871—1898.

Periods.	Per Million Living.													
	Under 1 Year.	1—2 years.	2—3 years.	3—4 years.	4—5 years.	Total under 5 years.	5—15 years.	15—25 years.	25—35 years.	35—45 years.	45—55 years.	55—65 years.	65 and upwards	All Ages.
1871—1880 ..	627	1389	483	186	323	608	577	1738	3224	3889	3616	2141	1542	1887
1881—1885 ...	581	1147	626	322	337	608	404	1750	2508	2796	3190	2805	732	1596
1886—1890 ...	176	488	195	—	105	195	278	1457	2527	2965	2475	2125	646	1402
1891—1895 ...	1737	774	353	274	288	706	485	1498	2479	3164	2553	2002	608	1551
1896—1898 (3 years) ...	1433	2405	669	415	291	1068	423	1411	2469	2396	2581	1234	368	1447
Increase or Decrease between 1871—1880 and 1896—1898 Inc.	128·5%	73·1%	38·5%	125·1%	—	75·6%	—	—	—	—	—	—	—	—
Dec.	—	—	—	—	9·9%	—	26·6%	18·8%	23·4%	38·3%	28·6%	42·3%	76·1%	23·3%

ENGLAND AND WALES.

MORTALITY FROM TABES MESENTERICA IN SEVERAL PERIODS, 1851—1895.

Period.	PER MILLION LIVING.	PER MILLION BIRTHS.	PER MILLION LIVING.
	All Ages.	Under 1 year.	Under 5 years.
1851—1860	260	3169	1625
1861—1870	295	3800	1856
1871—1880	318	4467	2028
1881—1885	289	4356	1852
1886—1890	265	4462	1764
1891—1895	238	4046	1577
Reduction or Increase per cent. between 1851—1860, and 1891—1895	—8·5	+27·7	—3·0

ST. HELENS.

MORTALITY FROM TABES MESENTERICA IN SEVERAL PERIODS, 1871—1898.

Periods.		PER MILLION LIVING.						
		Under 1 year.	1—2 years.	2—3 years.	3—4 years.	4—5 years.	Total under 5 years.	All Ages.
1871—1880... ...		2852	2538	786	496	388	1448	240
1881—1885		6787	4281	1253	214	449	2703	483
1886—1890... ...		11037	5468	1466	504	317	4110	654
1891—1895... ...		7106	3269	530	91	288	2420	417
1896—1898... ...		6687	2673	1070	415	—	2057	321
Increase or Decrease between 1871—80 and 1896—98.	Inc..	134·4%	5·3%	36·1%	—	—	42·0%	33·7%
	Dec.	—	—	—	16·3%	100%	—	—

APPENDIX B.

INFORMATION FOR CONSUMPTIVE PEOPLE

And for Those Living With Them.

1. Consumption is a preventible disease which is caused by minute living germs, called "Tubercle Bacilli," which usually enter the body with the air breathed.

2. The matter which Consumptive People cough or spit up contains the germs of the disease in great numbers. If this matter is spat upon the floors, or the walls, or elsewhere, as soon as it becomes dry, the germs of the disease which it contains are blown about and float in the air, like any other minute particles of dust, and are inhaled by anybody breathing that air; or they may fall upon milk or other food, and gain access to the body with that food. These are the commonest ways in which the seeds of the disease enter the body of a healthy person.

Do not spit, except into receptacles, the contents of which can be destroyed before they become dry.

If this simple precaution be taken, there is practically no danger of infection. The breath of Consumptive Persons is free from infection.

3. It may, therefore, be dangerous to sleep or to live in close relationship with a Consumptive, unless the patient is careful that what he coughs up is destroyed. A cup containing a little water should be used to spit in, so that the matter may not dry, and it should be emptied in the closet (not into the ashpit, or upon the footwalk or the roadway) and carefully washed afterwards with boiling water. If the Consumptive prefers to use linen or calico cloths or handkerchiefs to spit in, they should be thrown upon the fire and burnt forthwith. He should take care that his hands, face and clothing do not become soiled with the matter coughed up, nor should he swallow it.

4. It is better for a Consumptive to sleep alone, and the bed clothes and personal clothing should be boiled and washed separately from the clothing of other people.

5. Tubercle Bacilli are not only the cause of Ordinary Consumption of the Lungs, but they may also give rise to Consumption of the Bowels, and other parts of the body, therefore milk and other uncooked food should be carefully protected from the Tubercle Bacilli. If such food be kept in a place to which a Consumptive Patient of careless habits has access, and who may spit upon the floor, the dry particles of the matter spat up may blow about with dust, and find access to milk or other food, and in this way contaminate it.

6. Cows suffer from Consumption, and the Milk from Consumptive cows is liable to contain the Tubercle Bacilli. Milk had better be boiled for a few seconds, unless the consumer is sure that it comes from a healthy cow, and that it has not been exposed to danger of contamination afterwards.

7. Consumption is a disease from which large numbers of patients recover if the rooms they occupy are always kept thoroughly well-ventilated, and clean and free from dust. Wet cleansing of rooms, particularly of bedrooms occupied by sick persons, should be substituted for "dusting."

8. Sunshine and fresh air destroy Tubercle Bacilli, and are the principal curative agents ; the more sunshine and fresh air a Consumptive Patient gets, the more ilkely is he to recover. Every Consumptive should sleep with his bedroom window open top and bottom, and during the day should occupy a well ventilated room. Re-breathed air is the main condition favouring consumption. If the patient is warmly clad he need not fear keeping out of doors in any weather.

9. Sanitary Improvements which have been carried out in the Borough, with a view to admit more pure air and sunshine to dwellings, and to lessen overcrowding, have reduced the mortality from Consumption to about one half of what it was 30 years ago, but, to reduce it still further, the people must help themselves by keeping their rooms clean and well ventilated, and by maintaing strictly temperate habits.

10. Rooms that have been occupied by Consumptives should be thoroughly disinfected and cleansed before they are again occupied ; the carpets and bedding should be disinfected; in fact, so far as these precautions are concerned, Consumption may be regarded in precisely the same light as any other Infectious Disease.

11. The Officers of the Health Department are always ready to do the necessary disinfection, both of rooms and of clothing, free of charge.

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Medical Officer of Health.

APPENDIX C.

COUNTY BOROUGH OF ST. HELENS.

Certificates will be granted by the Health Committee to Dairy Farmers, respecting the Milk supplied from their Farms, if in addition to complying with the Regulations made by the Council, under the Dairies, Cowsheds, and Milkshops Order of 1885, they also carry out the following Regulations as to the Construction and Management of their Farms and Dairies :—

CONSTRUCTION.

1. The byre must be well lighted, ventilated, paved, and drained.

(In a well-lighted byre, every part of the byre should be easily visible in the day time with the doors closed.)

(In a well-ventilated byre the air will not feel oppressively close, or smell disagreeably when the cows are all housed and the doors shut.)

2. The Dairy must not communicate directly with the house, and must be well ventilated.

3. The place used for washing and boiling the milk utensils must not communicate directly with the house, and must have a proper water supply.

4. An efficient refrigerator or cooler for the milk must be provided.

MANAGEMENT.

1. Only cows which pass a Veterinary Surgeon's examination, the examination to include the application of the Tuberculin test, must be kept. The Veterinary Surgeon's certificate for each cow, together with the temperature chart after the application of the Tuberculin test, must be sent to the Medical Officer of Health. Newly-bought cows must be kept apart from the others till they have been examined and tested.

2. The milk must be of first-rate quality.

(Samples of milk will be taken from time to time to ascertain that the quality is really first-rate.)

3. The cows must be kept as clean as possible.

4. The byre must be kept as clean as possible. The ceiling should be cleared of dust and cobwebs at least every three months, and the walls and ceilings whitewashed every six months. The manure should be taken out twice a day and deposited some distance from the shed, and the walks and gutters flushed with water.

5. The farmer must at once notify any case of infectious disease, including Consumption, Measles, and Whooping Cough, occurring on the farm, or in the families of his employees, and take measures, satisfactory to the Medical Officer of Health, for preventing the possibility of the infection of the milk by such case.

6. Hay or food must not be stored in the byre, but kept in an adjoining building.

7. The dairy must only be used as a dairy, and the place for washing the milk utensils for that purpose.

MILKING.

1. The air of the byre must be kept as free from dust as possible, and at milking time especially so.

2. The udders and teats must be cleaned before milking.

(It is also recommended that the tail and hind quarters of the cows should be clipped.)

3. The milker must wash his or her hands thoroughly before milking, and also rinse the hands in water after milking each cow.

4. The milk must not remain a moment longer in the byre than is absolutely necessary, and must be at once strained and cooled.

5. The milk of any cow showing signs of disease of the udder, or of other disease, must not be used for sale.

COUNTY BOROUGH OF ST. HELENS.

This is to Certify that .....
supplies milk from his farm.....
in compliance with the special Regulations drawn up by the Health Committee to guard against the danger of the conveyance of disease by milk, one of these regulations being that all the cows on the farm must be ascertained to be free from Tuberculosis or Consumption, both by the Tuberculin test and by the examination of a Veterinary Surgeon.

Signed on behalf of the Health Committee of the Council
of the County Borough of St. Helens,

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Medical Officer of Health.

N.B.—This Certificate must be renewed every year, and will be cancelled immediately if any breach of the Regulations above referred to is committed.

COUNTY BOROUGH OF ST. HELENS.

TO THE HEALTH COMMITTEE OF THE COUNCIL OF THE COUNTY BOROUGH OF ST. HELENS.

I,.....do hereby undertake

(1) To keep on my farm .....
only cattle which pass the Tuberculin test and a Veterinary Surgeon's examination.

(2) To notify, immediately on my becoming aware of it, to the Medical Officer of Health for the Borough, any case of Infectious Disease, including Consumption, Measles, and Whooping Cough, occurring either on my farm, or in the families of my employees, and to take such measures as may be satisfactory to the said Medical Officer for preventing the possibility of the milk being infected by such case of Infectious Disease.

(3) Not to use for sale the milk of cows which show signs of disease of the udder or other disease.

(4) To comply with the Regulations made under the Dairies, Cowsheds, and Milk-shops Order, by the Council of the Borough of St. Helens, and also with all the special Regulations made by the Health Committee of the said Council for the purpose of guarding against the danger of conveyance of disease by milk.

I am fully aware that any breach of the Regulatians referred to above will result in the immediate cancelling of the Certificate granted by the Health Committee on the understanding that the said Regulations will be faithfully carried out; and I undertake to afford every facility for inspection to any person appointed for that purpose by the Health Committee of the St. Helens Town Council.

(Signed).....
Date.....